

## SEQUENCE LISTING

<110> University of Florida and Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD)

<120> Complete Biosynthetic Gene Set for Synthesis of Polyketide Antibiotics, Including the Albicidin Family, Resistance Genes, and Uses Thereof

<130> UF-398XC1

<150> US 60/419,463

<151> 2002-10-18

<160> 54

<170> PatentIn version 3.1

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<212> DNA

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 <213> *Xanthomonas albilineans*

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 <213> *Xanthomonas albilineans*

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cac	ttcg	gc	tc	gttgg	cccg	cccg	300
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 <213> Xanthomonas albilineans

<400> 6

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 <212> DNA  
 <213> Xanthomonas albilineans

<400> 7

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 <212> DNA  
 <213> Xanthomonas albilineans

<400> 8

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 <213> Xanthomonas albilineans

<400> 9

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 <211> 252  
 <212> DNA  
 <213> *Xanthomonas albilineans*  
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 <211> 2151  
 <212> DNA  
 <213> *Xanthomonas albilineans*  
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&lt;211&gt; 1032

&lt;212&gt; DNA

&lt;213&gt; Xanthomonas albilineans

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1032

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<213> *Xanthomonas albilineans*

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catccgctga tcgagaaact ggatcgccgaa cccgatgtcg atcggttccg tgatctggcg 1800
cgggtgctgt tcgatcgaggc cgcgctggcc gcggcgaca gcctcaagga cccggccgccc 1860
tacgtcgctc ggctcaacaa gctgttgcg cgtaa 1905

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<211> 6879

<212> PRT

<213> Xanthomonas albilineans

<400> 26

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Gly Val Leu Leu Gly Val Thr Ala Arg Ala Ala Ile Pro Asn Lys Ala  
 20 25 30

Gly Met Arg Arg Ala Trp Pro Pro Phe Pro Gln Ala Cys Cys Arg Ser  
 35 40 45

Ile Ala Tyr Leu Met Gln Arg Ser Pro Met Ser Pro Leu Gln Gln Thr  
 50 55 60

Leu Leu Thr Arg Leu Ala Ser Ala Ala Ser Arg Thr Met Ile Glu  
 65 70 75 80

Phe Pro Arg Pro Glu His Ala Ser Pro Gln Cys Cys Asp Asp Ala Glu  
 85 90 95

Leu Ala Arg Leu Ile Val Gln Leu Ser Ala Gly Leu Gln Pro Leu Ala  
 100 105 110

Met Pro Gly Thr Tyr Val Ile Ile Ala Ala Pro His Gly Gly Leu Phe  
 115 120 125

Ala Ala Ala Leu Leu Ala Cys Leu His Ala Asn Leu Val Ala Val Pro  
 130 135 140

Phe Pro Leu Asp Val Ala Gln Pro Asn Glu Arg Glu Gln Ala Arg Leu  
 145 150 155 160

Glu Thr Ile His Ala Gln Leu Met Glu His Gly Asn Val Ala Val Leu  
 165 170 175

Leu Asp Asp Val Ala Asp Arg Ser Ala Phe Ala Arg Met Ala His Ala

180	185	190	
Ala Gly Thr Phe Leu Ala Thr Phe Ala Asp Leu Lys Arg Glu Ser Thr			
195	200	205	
Ser Ala Ser Leu Cys Pro Ala Ser Pro Ser Asp Ala Ala Leu Leu Leu			
210	215	220	
Phe Thr Ser Gly Ser Ser Gly Glu Ser Lys Gly Ile Leu Leu Ser His			
225	230	235	240
Arg Asn Leu His His Gln Ile Gln Ala Gly Ile Arg Gln Trp Ser Leu			
245	250	255	
Asp Glu His Ser His Val Val Thr Trp Leu Ser Pro Ala His Asn Phe			
260	265	270	
Gly Leu His Phe Gly Leu Leu Ala Pro Trp Phe Ser Gly Ala Thr Val			
275	280	285	
Ser Phe Ile His Pro His Ser Tyr Met Lys Arg Pro Gly Phe Trp Leu			
290	295	300	
Glu Thr Val Ala Ala Arg Asp Ala Thr His Met Ala Ala Pro Asn Phe			
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Ala Phe Asp Tyr Cys Cys Asp Trp Val Met Val Glu Gln Leu Pro Pro			
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Ser Ala Leu Ser Thr Leu Thr His Ile Val Cys Gly Gly Glu Pro Val			
340	345	350	
Arg Ala Ser Thr Met Gln Arg Phe Phe Glu Lys Phe Ala Gly Leu Gly			
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Ala Arg Thr Gln Thr Phe Met Pro His Phe Gly Leu Ser Glu Thr Gly			
370	375	380	
Ala Leu Ser Thr Leu Asp Glu Ala Pro Gln Gln Arg Val Leu Glu Leu			
385	390	395	400
Asp Ala Asp Ala Leu Asn Lys Arg Lys Arg Val Ala Ala Gly Ala Ser			
405	410	415	
Gln Ala Arg Val Thr Val Leu Asn Cys Gly Ala Val Asp Gln Asp Val			
420	425	430	
Glu Leu Arg Ile Val Cys Pro Glu Gly Glu Thr Leu Cys Arg Pro Asp			
435	440	445	
Glu Ile Gly Glu Ile Trp Val Lys Ser Pro Ala Ile Ala Arg Gly Tyr			
450	455	460	
Leu Phe Ala Lys Pro Ala Asp Gln Arg Gln Phe Asn Cys Ser Ile Arg			
465	470	475	480
His Thr Asp Asp Ser Gly Tyr Phe Arg Thr Gly Asp Leu Gly Phe Ile			
485	490	495	
Ala Asp Gly Cys Leu Tyr Val Thr Gly Arg Val Lys Glu Val Leu Ile			
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Ile Arg Gly Lys Asn His Tyr Pro Ala His Ile Glu Ala Ser Ile Ala  
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Ala Thr Ala Ser Pro Gly Ala Leu Met Pro Val Val Phe Ser Ile Glu  
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Arg Gln Asp Glu Glu Arg Val Ala Ala Val Ile Ala Val Asn His Pro  
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Trp Thr Pro Ala Ala Cys Ala Ala Gln Ala His Lys Ile Arg Gln Gln  
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Val Ala Asp Gln His Gly Val Ala Leu Ala Glu Leu Ala Phe Ala Glu  
 580 585 590

His Arg His Val Phe Gly Thr Tyr Pro Gly Lys Leu Lys Arg Arg Leu  
 595 600 605

Val Lys Glu Ala Tyr Val Asn Gly Gln Leu Pro Leu Leu Trp His Glu  
 610 615 620

Gly Lys Asn Arg Asp Val Pro Ala Ala Ala Asp Asp Arg Gln Ala  
 625 630 635 640

Gln His Val Ala Asp Leu Cys Arg Lys Val Phe Leu Pro Val Leu Gly  
 645 650 655

Val Ala Pro Pro His Ala Gln Trp Pro Leu Cys Glu Leu Ala Leu Asp  
 660 665 670

Ser Leu Gln Cys Val Arg Leu Ala Gly Ala Ile Glu Glu Cys Tyr Gly  
 675 680 685

Val Pro Phe Glu Pro Thr Leu Leu Phe Lys Leu Glu Thr Val Gly Ala  
 690 695 700

Ile Ala Glu Tyr Val Leu Ala His Gly Arg Gln Ala Pro Thr Pro Thr  
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Arg Ala Pro Val Ala Ser Thr Thr Cys Ser Glu Glu Pro Ile Ala Ile  
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Val Ala Met His Cys Glu Val Pro Gly Ala Gly Glu Asn Thr Glu Ala  
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Leu Trp Ser Phe Leu Arg Ser Asp Val Asn Ala Ile Arg Pro Ile Glu  
 755 760 765

Ser Thr Arg Pro Asp Leu Trp Ala Ala Met Arg Ala Tyr Pro Gly Leu  
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Ala Gly Glu Gln Leu Pro Arg Tyr Ala Gly Phe Leu Asp Asp Val Asp  
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Ala Phe Asp Ala Ala Phe Phe Gly Ile Ser Arg Arg Glu Ala Glu Cys  
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Met Asp Pro Gln Gln Arg Lys Val Leu Glu Met Val Trp Lys Leu Ile  
 820 825 830

Glu Gln Ala Gly His Asp Pro Leu Ser Trp Gly Gly Gln Pro Val Gly

835

840

845

Leu Phe Val Gly Ala His Thr Ser Asp Tyr Gly Glu Leu Leu Ala Ser  
 850 855 860

Gln Pro Gln Leu Met Ala Gln Cys Gly Ala Tyr Ile Asp Ser Gly Ser  
 865 870 875 880

His Leu Thr Met Ile Pro Asn Arg Ala Ser Arg Trp Phe Asn Phe Thr  
 885 890 895

Gly Pro Ser Glu Val Ile Asn Ser Ala Cys Ser Ser Ser Leu Val Ala  
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Leu His Arg Ala Val Gln Ser Leu Arg Gln Gly Glu Ser Ser Val Ala  
 915 920 925

Leu Val Leu Gly Val Asn Leu Ile Leu Ala Pro Lys Val Leu Ala  
 930 935 940

Ser Ala Ser Ala Gly Met Leu Ser Pro Asp Gly Arg Cys Lys Thr Leu  
 945 950 955 960

Asp Ala Ala Ala Asp Gly Phe Val Arg Ser Glu Gly Ile Ala Gly Val  
 965 970 975

Ile Leu Lys Pro Leu Ala Gln Ala Leu Ala Asp Gly Asp Arg Val Tyr  
 980 985 990

Gly Leu Val Arg Gly Val Ala Val Asn His Gly Gly Arg Ser Asn Ser  
 995 1000 1005

Leu Arg Ala Pro Asn Val Asn Ala Gln Arg Gln Leu Leu Ile Arg  
 1010 1015 1020

Thr Tyr Gln Glu Ala Gly Val Glu Pro Ala Ser Val Gly Tyr Val  
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Glu Leu His Gly Thr Gly Thr Ser Leu Gly Asp Pro Ile Glu Ile  
 1040 1045 1050

Gln Ala Leu Lys Glu Ala Phe Ile Ala Leu Gly Ala Gln Ala Ala  
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Pro Ser Asn Cys Gly Ile Gly Ser Val Lys Ser Ala Leu Gly His  
 1070 1075 1080

Leu Glu Ala Ala Ala Gly Leu Thr Gly Leu Ile Lys Val Leu Leu  
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Met Leu Lys His Gly Glu Gln Ala Gly Thr Arg His Phe Ser Thr  
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Leu Asn Pro Leu Ile Asp Leu Arg Gly Thr Ser Phe Glu Val Val  
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Ala Gln His Arg Ala Trp Pro Ser Gln Val Gly Ile His Gly Thr  
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Leu Leu Pro Arg Arg Ala Gly Ile Ser Ser Phe Gly Phe Gly Gly  
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Ala Asn Ala His Ala Ile Val Glu Glu His Val Ile Ala Thr Pro  
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 Pro Ser Thr Ser Ser Ala Gly Gly Pro Val Gly Ile Val Leu Ser  
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 Glu Gly Arg Leu Ala Gly Val Met Asp Ala Glu Val His His Gly  
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 Val Val Asp Ala Ala Ala Thr Ala Pro Glu His Gly Arg Gln Thr  
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 Val Ser Leu Pro Val Tyr Pro Phe Ala Arg Glu Arg Tyr Trp Leu  
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 Ala Gln Val Ala Phe Leu His Pro Leu Met Met Glu Glu Thr Glu  
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 Leu Glu Val Glu Ile Glu Leu Ser Lys Ser Asp Gln Asp Glu Phe  
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 Asp Phe Gln Leu His Asp Ala His Arg Gln Gln Val Phe Ser Gln  
 1430 1435 1440  
 Gly His Val Arg Arg Arg Val Tyr Thr Ala Thr Pro Arg Leu Asp  
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 Leu Ala Gln Leu Gln Lys Leu Cys Ala Glu Arg Val Leu Ser Gly

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Glu Asp Cys Tyr Ala His Phe	Thr Ala Cys Gly	Leu Gln Leu Gly
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Asp Arg Leu Lys Ser Val Gln	Ser Ile Gly Cys Gly	Arg Asn Gly
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Glu Gly Glu Pro Ile Ala Leu	Gly Val Leu Arg	Leu Pro Pro Ser
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Ser Val Glu Asp Ser His Val	Leu Pro Pro Ser	Leu Leu Asp Gly
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Ala Leu Gln Cys Ser Leu Gly	Leu Gln Arg Asp	Val Glu His Ile
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Ala Met Pro Tyr Thr Leu Glu	Arg Met Thr Val His	Ala Pro Ile
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Pro Pro Glu Ala Trp Val Leu	Leu Arg His Gly	His Ala Ala Arg
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Gln Ser Leu Asp Ile Asp Leu	Leu Asp Ser Glu Gly	Arg Val Cys
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Val Ser Leu Gly Asn Tyr Thr	Gly Arg Ala Pro Lys	Ala Val Ser
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Ala Val Arg Ala Leu Val Leu	Ala Pro Val Trp Gln	Ala Leu Thr
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Glu Thr Ala Pro Ala Trp Pro	Asp Pro Ala Glu Arg	Ile Val Thr
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Val Gly Asp Asp Ala Trp Arg	Ser His Phe Gly Phe	Asp Glu Pro
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Ala Leu Ser Leu Glu Asp Ser	Val Glu Val Ile Ala	Thr Arg Leu
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Gly Gln Ser Gly Lys Phe Asp	His Leu Val Trp Ile	Val Pro Ile
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Ala Glu Ser Glu Thr Asp Ile	Ala Ala Gln Gly	Ser Ala Ala Ile
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His Arg Pro Leu Gly Leu Thr	Val Leu Thr Arg Gln	Ala Leu Thr
1715	1720	1725
Arg Gln Pro Ser His Ala Ala	Val His Gly Leu Ile	Gly Thr Leu
1730	1735	1740
Ala Lys Glu Tyr Cys Asn Trp	Lys Ile Arg Leu Leu	Asp Leu Pro
1745	1750	1755
Ser Val Lys Ser Trp Pro Gln	Trp Glu Gln Leu Arg	Ser Leu Pro
1760	1765	1770

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 Pro Pro Pro Tyr Arg Val Gly Gly Val Tyr Val Val Ile Gly Gly  
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 Tyr Asp Ala Gln Leu Ile Trp Ile Gly Arg Arg Val Leu Asp Glu  
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 Gly Ile Ala Arg Lys Gln Thr Arg Leu Ala Ser Leu Gly Arg Ala  
 1850 1855 1860  
 Pro His Tyr Ile Ser Ala Asp Ala Ser Asp Pro Ala Ala Leu Gln  
 1865 1870 1875  
 Ala Ala His Asn Glu Ile Val Ala Leu His Gly Gln Pro His Gly  
 1880 1885 1890  
 Leu Ile Leu Ser Asn Ile Val Leu Lys Asp Ala Ser Leu Ala Arg  
 1895 1900 1905  
 Met Glu Glu Ala Asp Phe Arg Asp Val Leu Ala Ala Lys Leu Asp  
 1910 1915 1920  
 Val Ser Val Cys Ala Ala Gln Val Phe Gly Thr Ala Pro Leu Asp  
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 Phe Val Leu Phe Phe Ser Ser Ile Gln Ser Thr Thr Lys Ala Ala  
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 1970 1975 1980  
 Trp Gly Tyr Trp Gly Ser Val Gly Val Val Ala Gly Glu Asp Tyr  
 1985 1990 1995  
 Arg Arg Arg Met Ala Gln Lys His Met Ala Ser Ile Glu Gly Ala  
 2000 2005 2010  
 Glu Ala Met Gln Val Leu Ser Gln Leu Leu Cys Ala Pro Leu Gln  
 2015 2020 2025  
 Arg Leu Ala Tyr Val Lys Ile Asp Asp Ala Asn Ala Met Arg Ala  
 2030 2035 2040  
 Leu Gly Val Val Glu Asp Glu Ser Val Gln Ile Pro Val His Ala  
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 Pro Ala Glu Pro Pro Arg Gly Gln Pro Gly Pro Val Val Glu Leu  
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Ser Val Asn Leu Asp Ala Arg Arg Glu Arg Glu Thr Leu Leu Ala  
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 Ala Trp Leu Leu Glu Leu Ile Glu Gln Leu Gly Gly Phe Pro Pro  
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 Ala Asp Lys Pro Pro Asp Asp Ala Arg Gly Ala Trp Asn Ala His  
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 Ala Tyr Gly Glu His Ile Glu Glu Tyr Leu Tyr Thr Asp Leu Ser  
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 Pro Val Phe Leu His His Ala Glu Lys His Tyr Gln Pro Arg Ala  
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 Pro Tyr Leu Arg Thr Ala Cys Phe Asp Val Ala Arg Ala Pro Thr  
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Ala Ser Thr Ile Glu Val Ala	Arg Asn Glu Lys	Val Thr Val Pro
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Ser Gln Pro Ala Glu Ala Gly	Glu Ser Pro Leu Asp	Leu Val Lys
2450	2455	2460
Lys Leu Leu Gly Arg Ile Leu	Lys Met Asp Pro Ala	Thr Leu Asp
2465	2470	2475
Thr Ser His Pro Leu Glu Tyr	Tyr Gly Val Asp Ser	Ile Val Ala
2480	2485	2490
Ile Glu Leu Ala Met Ala Leu	Arg Glu Thr Phe Pro	Gly Phe Glu
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Val Ser Glu Leu Phe Glu Thr	Gln Ser Ile Asp Thr	Leu Leu Gly
2510	2515	2520
Ser Leu Glu Gln Ala Pro Leu	Leu Ala Thr Leu Thr	Ala Pro Pro
2525	2530	2535
Gln Gln Asp Met Leu Gln Gln	Leu Lys Gln Leu Leu	Ala Arg Thr
2540	2545	2550
Leu Lys Leu Asp Ile Thr Gln	Ile Asp Thr Ser Lys	Thr Leu Glu
2555	2560	2565
Ser Tyr Gly Val Asp Ser Ile	Val Ile Ile Glu Leu	Ala Asn Ala
2570	2575	2580
Leu Arg Glu Arg Tyr Pro Ser	Leu Asp Ala Ser Gln	Leu Met Glu
2585	2590	2595
Thr Leu Ser Ile Asp Arg Leu	Val Ala Gln Trp Gln	Ala Thr Glu
2600	2605	2610
Pro Ala Val Pro Ala Glu Pro	Thr Ala Glu Pro Pro	Val Ala Asp
2615	2620	2625
Glu Asp Ala Ala Ala Ile Ile	Gly Leu Ala Gly Arg	Phe Pro Gly
2630	2635	2640
Ala Asp Thr Leu Glu Glu Phe	Trp Asn Asn Leu Arg	Asn Gly Gln
2645	2650	2655
Ser Ser Met Gly Glu Val Pro	Gly Glu Arg Trp Asp	His Gln His
2660	2665	2670
Tyr Phe Asp Ser Glu Arg Gln	Ala Pro Gly Lys Thr	Tyr Ser Arg
2675	2680	2685

Trp Gly Ala Phe Leu Arg Asp Ile Asp Gly Phe Asp Ala Ala Phe  
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 Phe Glu Trp Pro Asp Ser Val Ala Leu Glu Ser Asp Pro Gln Ala  
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 Tyr Thr Pro Gly Ser Leu Ser Lys Ser Gln Arg Val Gly Val Phe  
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 Val Gly Val Met Asn Gly Tyr Tyr Ser Gly Gly Ala Arg Phe Trp  
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 His Leu Ala Leu Glu Ser Leu Arg Ser Gly Ser Cys Glu Val Ala  
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 Asn Leu Ala Gly Ala Ala Met Leu Ser Ala Gly Ala Ser Cys Arg  
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 Asp Val Ile His Ala Val Ile Arg Gly Ser Met Ile Asn Ala Gly  
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 Gly His Thr Ser Ala Phe Ser Ser Pro Asn Pro Ala Ala Gln Ala  
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 Glu Val Val Arg Gln Ala Leu Gln Arg Ala Gly Val Ala Pro Asp  
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 Ser Ile Ser Tyr Ile Glu Ala His Gly Thr Gly Thr Val Leu Gly  
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 Gln Phe Arg His Gly Glu Leu Val Pro Ser Leu Asn Ala Phe Pro  
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Leu Asn Pro Tyr Ile Glu Phe Gly Arg Phe Gln Val Gln Gln Gln  
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Pro Ala Pro Trp Pro Arg Arg Gly Ala Gln Pro Arg Arg Ala Gly  
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Leu Ser Ala Phe Gly Ala Gly Gly Ser Asn Ala His Leu Val Val  
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Glu Glu Ala Pro Ala Met Ala Pro Gly Val Ser Ile Ser Ala Ser  
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Ser Pro Ala Leu Ile Val Leu Ser Ala Arg Thr Leu Pro Ala Leu  
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Gln Gln Arg Ala Arg Asp Leu Leu Val Trp Met Gln Ala Arg Gln  
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Val Asp Asp Val Met Leu Ala Asp Val Ala Tyr Thr Leu His Leu  
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Gly Arg Val Ala Met Glu Gln Arg Leu Ala Phe Thr Ala Gly Ser  
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Ala Ala Glu Leu Ser Glu Lys Leu Gln Ala Tyr Leu Gly His Ala  
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Ile Arg Ala Asp Ile Tyr Leu Ser Glu Asp Thr Pro Gly Lys Pro  
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Ala Gly Ala Pro Ile Val Ala Glu Glu Asp Leu Leu Thr Leu Met  
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Asp Ala Trp Ile Glu Lys Gly Gln Tyr Gly Arg Leu Leu Glu Tyr  
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Trp Thr Lys Gly Gln Pro Ile Asp Trp Asn Lys Leu Tyr Trp Arg  
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Lys Leu Tyr Ala Asp Gly Arg Pro Arg Arg Ile Ser Leu Pro Thr  
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Tyr Pro Phe Glu His Arg Arg Tyr Trp Gln Thr Pro Val Pro Gly  
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Glu Arg Ser Leu His Ala Thr Ala Pro Ala Thr Arg Glu Thr Val  
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Ala Val Gly Ala Met Pro Asp Pro Ala Gly Ala Thr Val Gln Ala  
 3230 3235 3240

Arg Leu Cys Ala Leu Cys Gln Val Leu Leu Gly Lys Pro Val Thr  
 3245 3250 3255

Ala Gln Met Asp Phe Phe Ala Val Gly Gly His Ser Val Leu Ala  
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Ile Gln Leu Val Ser Arg Ile Arg Lys Ser Phe Gly Val Glu Tyr  
 3275 3280 3285

Pro Val Ser Ala Leu Phe Glu Ser Ala Leu Leu Ser Asp Met Ala

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Pro Ala Leu Leu Pro Ala Gly Arg Val Gly Ala Ile Pro Ala Thr		
3320	3325	3330
Tyr Ala Gln Glu Arg Leu Trp Leu Val His Glu His Met Ser Glu		
3335	3340	3345
Gln Arg Ser Ser Tyr Asn Ile Thr Phe Ala Met His Phe Arg Gly		
3350	3355	3360
Val Asp Phe Arg Ala Glu Ala Met Arg Ala Ala Leu Asn Ala Leu		
3365	3370	3375
Val Val Arg His Glu Val Leu Arg Thr Arg Phe Leu Ser Glu Asp		
3380	3385	3390
Gly Gln Leu Gln Gln Val Ile Ala Ala Ser Leu Thr Leu Glu Val		
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Pro Val Arg Glu Met Ser Val Glu Glu Val Asp Leu Leu Leu Ala		
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Ala Ser Thr Arg Glu Thr Phe Asp Leu Arg Gln Gly Pro Leu Phe		
3425	3430	3435
Lys Ala Arg Ile Leu Arg Val Ala Ala Asp His His Val Val Leu		
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Ser Ser Ile His His Ile Ile Ser Asp Gly Trp Ser Leu Gly Val		
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Phe Asn Arg Asp Leu His Gln Leu Tyr Glu Ala Cys Leu Arg Gly		
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Thr Pro Pro Thr Leu Pro Thr Leu Ala Val Gln Tyr Ala Asp Tyr		
3485	3490	3495
Ala Leu Trp Gln Arg Gln Trp Glu Leu Ala Ala Pro Leu Ser Tyr		
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Trp Thr Arg Ala Leu Glu Gly Tyr Asp Asp Gly Leu Asp Leu Pro		
3515	3520	3525
Tyr Asp Arg Pro Arg Gly Ala Thr Arg Ala Trp Arg Ala Gly Leu		
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Val Lys His Arg Tyr Pro Pro Gln Leu Ala Gln Gln Leu Ala Ala		
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Tyr Ser Gln Gln Tyr Gln Ala Thr Leu Phe Met Ser Leu Leu Ala		
3560	3565	3570
Gly Leu Ala Leu Val Leu Gly Arg Tyr Ala Asp Arg Lys Asp Val		
3575	3580	3585
Cys Ile Gly Ala Thr Val Ser Gly Arg Asp Gln Leu Glu Leu Glu		
3590	3595	3600

Glu Leu Ile Gly Phe Phe Ile Asn Ile Leu Pro Leu Arg Val Asp  
 3605 3610 3615  
 Leu Ser Gly Asp Pro Cys Leu Glu Glu Val Leu Leu Arg Thr Arg  
 3620 3625 3630  
 Gln Val Val Leu Asp Gly Phe Ala His Gln Ser Val Pro Phe Glu  
 3635 3640 3645  
 His Val Leu Gln Ala Leu Arg Arg Gln Arg Asp Ser Ser Gln Ile  
 3650 3655 3660  
 Pro Leu Val Pro Val Met Leu Arg His Gln Asn Phe Pro Thr Gln  
 3665 3670 3675  
 Glu Ile Gly Asp Trp Pro Glu Gly Val Arg Leu Thr Gln Met Glu  
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 Leu Gly Leu Asp Arg Ser Thr Pro Ser Glu Leu Asp Trp Gln Phe  
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 Gln Gln Ala Leu Glu Ala Met Val Ser Arg Pro Gln Leu Arg Val  
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 Gly Lys Trp Asp Met Leu Thr Ala Glu Glu Arg Arg Leu Phe Ala  
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 Gln Gln Phe Glu Arg Gln Ala Gln Ala Thr Pro Gln Ala Ile Ala  
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 Arg Asp Val Arg Val Ala Val Gln Ser Ala Arg Thr Pro Glu Leu  
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 Leu Met Ala Leu Leu Ala Ile Phe Lys Ala Gly Ala Cys Tyr Val  
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 Pro Ile Asp Pro Ala Tyr Pro Ala Ala Tyr Arg Glu Gln Ile Leu  
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 Ala Glu Val Gln Val Ser Ile Val Leu Glu Gln Asp Glu Leu Ala  
 3875 3880 3885  
 Leu Asp Glu Gln Gly Gln Phe His Asn Pro Arg Trp Arg Glu Gln  
 3890 3895 3900

Ala Pro Thr Pro Leu Gly Leu Arg Glu His Pro Gly Asp Leu Ala  
 3905 3910 3915  
 Cys Val Met Val Thr Ser Gly Ser Thr Gly Arg Pro Lys Gly Val  
 3920 3925 3930  
 Met Val Pro Tyr Ala Gln Leu Tyr Asn Trp Leu His Ala Gly Trp  
 3935 3940 3945  
 Gln Arg Ser Pro Phe Glu Ala Gly Glu Arg Val Leu Gln Lys Thr  
 3950 3955 3960  
 Ser Ile Ala Phe Ala Val Ser Val Lys Glu Leu Leu Ser Gly Leu  
 3965 3970 3975  
 Leu Ala Gly Val Glu Gln Val Met Leu Pro Asp Glu Gln Val Lys  
 3980 3985 3990  
 Asp Ser Leu Ala Leu Ala Arg Ala Ile Glu Gln Trp Gln Val Thr  
 3995 4000 4005  
 Arg Leu Tyr Leu Val Pro Ser His Leu Gln Ala Leu Leu Asp Ala  
 4010 4015 4020  
 Thr Gln Gly Arg Asp Gly Leu Leu His Ser Leu Arg His Val Val  
 4025 4030 4035  
 Thr Ala Gly Glu Ala Leu Pro Ser Ala Val Arg Glu Thr Val Arg  
 4040 4045 4050  
 Ala Arg Leu Pro Gln Val Gln Leu Trp Asn Asn Tyr Gly Cys Thr  
 4055 4060 4065  
 Glu Leu Asn Asp Ala Thr Tyr His Arg Ser Asp Thr Val Ala Pro  
 4070 4075 4080  
 Gly Thr Phe Val Pro Ile Gly Ala Pro Ile Ala Asn Thr Glu Val  
 4085 4090 4095  
 Tyr Val Leu Asp Arg Gln Leu Arg Gln Val Pro Ile Gly Val Met  
 4100 4105 4110  
 Gly Glu Leu His Val His Ser Val Gly Met Ala Arg Gly Tyr Trp  
 4115 4120 4125  
 Asn Arg Pro Gly Leu Thr Ala Ser Arg Phe Ile Ala His Pro Tyr  
 4130 4135 4140  
 Ser Glu Glu Pro Gly Thr Arg Leu Tyr Lys Thr Gly Asp Met Val  
 4145 4150 4155  
 Arg Arg Leu Ala Asp Gly Thr Leu Glu Tyr Leu Gly Arg Gln Asp  
 4160 4165 4170  
 Phe Glu Val Lys Val Arg Gly His Arg Val Asp Thr Arg Gln Val  
 4175 4180 4185  
 Glu Ala Ala Leu Arg Ala Gln Pro Ala Val Ala Glu Ala Val Val  
 4190 4195 4200  
 Ser Gly His Arg Val Asp Gly Asp Met Gln Leu Val Ala Tyr Val

4205	4210	4215
Val Ala Arg Glu Gly Gln Ala	Pro Ser Ala Gly Glu	Leu Lys Gln
4220	4225	4230
Gln Leu Ser Ala Gln Leu Pro	Thr Tyr Met Leu Pro	Thr Val Tyr
4235	4240	4245
Gln Trp Leu Glu Gln Leu Pro	Arg Leu Ser Asn Gly	Lys Leu Asp
4250	4255	4260
Arg Leu Ala Leu Pro Ala Pro	Gln Ala Val His Ala	Gln Glu Tyr
4265	4270	4275
Val Ala Pro Arg Asn Gln Ala	Glu Gln Arg Leu Ala	Ala Leu Phe
4280	4285	4290
Ala Glu Val Leu Arg Val Glu	Gln Val Gly Ile His	Asp Asn Phe
4295	4300	4305
Phe Ala Leu Gly Gly His Ser	Leu Ser Ala Ser Gln	Leu Ile Ser
4310	4315	4320
Arg Ile Ala Arg Asp Met Ala	Ile Asp Leu Pro Leu	Ala Met Leu
4325	4330	4335
Phe Glu Leu Pro Thr Val Ala	Gln Leu Ser Glu Ser	Leu Ala Ser
4340	4345	4350
His Ala Arg Asp Ser Asp Tyr	Asp Val Ile Pro Ala	Ser Thr Glu
4355	4360	4365
Glu Ala Thr Ile Pro Leu Ser	Thr Ala Gln Glu Arg	Met Trp Phe
4370	4375	4380
Leu His Lys Phe Val Gln Glu	Thr Pro Tyr Asn Thr	Pro Gly Leu
4385	4390	4395
Ala Leu Leu Gln Gly Glu Leu	Asp Ile Ser Ala Leu	Gln Val Ala
4400	4405	4410
Phe Arg Cys Val Leu Glu Arg	His Ala Val Leu Arg	Thr His Phe
4415	4420	4425
Val Glu Thr Glu Gln Gln Cys	Val Gln Val Ile Gly	Ala Ala Glu
4430	4435	4440
Gln Phe Val Leu Gln Leu Arg	Ser Ile Arg Asp Glu	Ala Asp Leu
4445	4450	4455
His Gly Leu Leu His Thr Ala	Val Ser Glu Pro Phe	Asp Leu Glu
4460	4465	4470
Arg Glu Leu Pro Leu Arg Ala	Leu Leu Tyr Arg Leu	Asp Asp Arg
4475	4480	4485
Arg His Tyr Leu Ala Val Val	Ile His His Ile Val	Phe Asp Gly
4490	4495	4500
Trp Ser Thr Ser Ile Leu Phe	Arg Glu Leu Ala Thr	His Tyr Ala
4505	4510	4515

Ala Cys Arg His Gly Gln Ser Ala Pro Leu Pro Pro Leu Glu Leu  
 4520 4525 4530

Ser Tyr Ala Asp Tyr Ala Arg Trp Glu Arg Ala Arg Leu Asn Gln  
 4535 4540 4545

Glu Asp Ala Leu Arg Lys Leu Glu Tyr Trp Lys Thr Gln Leu Ala  
 4550 4555 4560

Asp Ala Pro Pro Leu Val Leu Pro Thr Thr Tyr Ala Arg Pro Val  
 4565 4570 4575

Phe Gln Asn Phe Asn Gly Ala Thr Val Ala Leu Gln Ile Glu Pro  
 4580 4585 4590

Pro Leu Leu Gln Arg Leu Gln Arg Phe Ala Asp Ala His Ser Phe  
 4595 4600 4605

Thr Leu Tyr Met Leu Leu Leu Ala Ala Leu Gly Val Val Leu Ser  
 4610 4615 4620

Arg His Ala Arg Gln Lys His Phe Cys Ile Gly Ser Pro Val Ala  
 4625 4630 4635

Asn Arg Ala Arg Ala Glu Leu His Gly Leu Ile Gly Leu Phe Val  
 4640 4645 4650

Asn Thr Leu Ala Val Arg Leu Asp Leu Asp Gly Asn Pro Ser Val  
 4655 4660 4665

Arg Glu Leu Leu Glu Arg Ile His Cys Thr Thr Leu Ala Ala Tyr  
 4670 4675 4680

Glu His Gln Asp Val Pro Phe Glu Arg Ile Val Glu Ser Leu Lys  
 4685 4690 4695

Val Pro Arg Asp Thr Ala Arg Asn Pro Leu Gly Gln Val Met Leu  
 4700 4705 4710

Asn Phe Gln Asn Met Pro Met Ser Ala Phe Asp Leu Asp Gly Val  
 4715 4720 4725

Gln Val Gln Val Leu Pro Met His Asn Gly Thr Ala Lys Cys Glu  
 4730 4735 4740

Leu Thr Phe Asp Leu Leu Leu Asp Gly Ser Arg Leu Ser Gly Phe  
 4745 4750 4755

Val Glu Tyr Ala Thr Gly Leu Phe Ala Pro Glu Trp Val Gln Ala  
 4760 4765 4770

Leu Val Gln Gln Phe Lys Cys Val Leu Ala Ala Leu Val Glu Arg  
 4775 4780 4785

Pro Glu Ala Ser Leu Asn Asp Leu Pro Met Ala Pro Asn Glu Ala  
 4790 4795 4800

Gln Pro Ala Ser Pro Ala Leu Met Lys His Val Ala Pro Ser Leu  
 4805 4810 4815

Pro Asn Leu Leu Glu Ala Met Ala Ala Asn Asp Ala Ala Arg Leu

4820	4825	4830
Ala Leu Gln Ala Pro Glu Gly	Ala Leu Ser Tyr Ala Gln Leu Ile	
4835	4840	4845
Glu Ala Ala Asn Glu Phe Ala	Trp Arg Leu Arg Cys Glu His Ala	
4850	4855	4860
Gly Pro Asp Lys Val Val Ala	Leu Cys Leu Ala Pro Cys Ser Ala	
4865	4870	4875
Leu Val Val Ala Leu Leu Ala	Ala Ser Leu Cys Gly Ala Ala Ser	
4880	4885	4890
Val Leu Ile Asp Pro Thr Thr	Thr Ala Glu Ala Gln Tyr Asp Gln	
4895	4900	4905
Leu Phe Glu Thr Arg Ala Gly	Ile Val Val Thr Cys Ser Ser Leu	
4910	4915	4920
Leu Glu Lys Leu Pro Leu Asp	Asp Gln Ala Val Val Leu Ile Asp	
4925	4930	4935
Glu Gln Ala Ala Glu Ala Thr	Pro Arg Leu Met His Phe Thr Asp	
4940	4945	4950
Asp Pro Ala Leu Pro Ala Met	Leu Tyr Cys Val Cys Asp Glu Lys	
4955	4960	4965
Gly Arg Thr Arg Thr Ile Met	Val Glu Ser Gly Ser Leu Ser Ser	
4970	4975	4980
Arg Leu Leu Asp Ser Val Gln	Arg Phe Ser Leu Glu Arg Thr Asp	
4985	4990	4995
Arg Phe Leu Leu Arg Ser Pro	Leu Ser Ala Glu Leu Ala Asn Thr	
5000	5005	5010
Glu Val Leu Gln Trp Leu Ala	Ala Gly Gly Ser Leu Ser Ile Ala	
5015	5020	5025
Pro Met His Gly Asp Phe Asp	Ala Ala Ala Trp Leu Glu Thr Leu	
5030	5035	5040
Ala Thr Tyr Ala Ile Thr Val	Ala Tyr Leu Ala Gln Val Glu Leu	
5045	5050	5055
Thr Glu Met Leu Ala His Leu	Gln Asn His Pro Leu Glu Arg Asn	
5060	5065	5070
Lys Leu Ala Gly Leu Arg Val	Leu Val Val His Gly Ala Pro Leu	
5075	5080	5085
Pro Ile Ala Pro Leu Met Arg	Leu Asp Ala Trp Leu Arg Glu Val	
5090	5095	5100
Gly Gly Ser Ala Arg Ile Phe	Ala Ala Tyr Gly Asn Ala Glu Phe	
5105	5110	5115
Gly Ala Glu Ile Leu Ser Gln	Asp Val Ser Ala Ala Leu Gln Ala	
5120	5125	5130

Gly Ile Gly Ala Gln Tyr Lys His Arg Arg Gly Leu Phe Pro Leu  
 5135 5140 5145  
 Gly Ala Asn Ser Met Cys His Val Val Gln Ser Asn Gly Arg Ile  
 5150 5155 5160  
 Ala Pro Asp Gly Met Val Gly Glu Leu Trp Ile Thr Gln Pro Ala  
 5165 5170 5175  
 Cys Leu Tyr Lys Thr Asp Ala Leu Val Arg Arg Leu Ala Asn Gly  
 5180 5185 5190  
 Gln Leu Glu Trp Leu Gly Ser Leu Asp Val Gln Ser Arg Ile Asp  
 5195 5200 5205  
 Asp Pro Arg Ile Asp Leu Cys Val Val Glu Ala Gln Leu Arg Leu  
 5210 5215 5220  
 Cys Glu Asp Val Gly Glu Ala Val Val Leu Tyr Glu Pro Leu Lys  
 5225 5230 5235  
 Arg Cys Leu Val Ala Tyr Leu Ser Ala Arg Ser Thr Ala Ala Ile  
 5240 5245 5250  
 Met Thr Asp Glu Thr Leu Ala Arg Ile Arg Gln Ala Leu Ser Glu  
 5255 5260 5265  
 Thr Leu Pro Asp Tyr Leu Leu Pro Ala Ile Trp Val Pro Leu Ala  
 5270 5275 5280  
 His Trp Pro Arg Leu Pro His Gly Arg Val Asp Leu Gly Ala Leu  
 5285 5290 5295  
 Pro Ala Pro Asp Phe Asp Leu Ala Arg His Glu Ser Tyr Ile Ala  
 5300 5305 5310  
 Pro Arg Thr Ala Val Glu Gln Ala Val Ala Glu Ile Trp Gln Arg  
 5315 5320 5325  
 Val Leu Lys Arg Thr Gln Val Gly Val His Asp Asn Phe Phe Glu  
 5330 5335 5340  
 Leu Gly Gly His Ser Val Leu Ala Ile Gln Leu Val Ser Gly Leu  
 5345 5350 5355  
 Arg Lys Ala Leu Ala Ile Glu Val Pro Val Thr Leu Val Phe Glu  
 5360 5365 5370  
 Ala Pro Ile Leu Gly Ala Leu Ala Arg Gln Ile Ala Pro Leu Leu  
 5375 5380 5385  
 Val Ser Glu Arg Arg Pro Arg Pro Pro Gly Leu Thr Arg Leu Glu  
 5390 5395 5400  
 His Thr Gly Pro Ile Pro Ala Ser Tyr Ala Gln Glu Arg Leu Trp  
 5405 5410 5415  
 Leu Val His Glu His Met Glu Glu Gln Arg Thr Ser Tyr Asn Ile  
 5420 5425 5430

Ser Asn Ala Ala His Phe Ile Gly Ala Ala Phe Ser Val Glu Ala  
 5435 5440 5445  
 Met Arg Ala Ala Leu Asn Ala Leu Val Ala Arg His Glu Val Leu  
 5450 5455 5460  
 Arg Thr Arg Phe Leu Ser Glu Asp Gly Gln Leu Gln Gln Val Ile  
 5465 5470 5475  
 Ala Ala Ser Leu Thr Leu Glu Val Pro Val Arg Glu Val Ser Ala  
 5480 5485 5490  
 Glu Glu Val Asp Leu Leu Leu Ala Ala Ser Thr Arg Glu Thr Phe  
 5495 5500 5505  
 Asp Leu Arg Gln Gly Pro Leu Phe Lys Ala Arg Ile Leu Arg Val  
 5510 5515 5520  
 Ala Ala Asp His His Val Val Leu Ser Ser Ile His His Ile Ile  
 5525 5530 5535  
 Ser Asp Gly Trp Ser Leu Gly Val Phe Asn Arg Asp Leu His Gln  
 5540 5545 5550  
 Leu Tyr Glu Ala Cys Leu Arg Gly Thr Pro Pro Thr Leu Pro Thr  
 5555 5560 5565  
 Leu Ala Val Gln Tyr Ala Asp Tyr Ala Leu Trp Gln Arg Gln Trp  
 5570 5575 5580  
 Glu Leu Ala Ala Pro Leu Ser Tyr Trp Thr Arg Ala Leu Glu Gly  
 5585 5590 5595  
 Tyr Asp Asp Gly Leu Asp Leu Pro Tyr Asp Arg Pro Arg Gly Ala  
 5600 5605 5610  
 Thr Arg Ala Trp Arg Ala Gly Leu Val Lys His Arg Tyr Pro Pro  
 5615 5620 5625  
 Gln Leu Ala Gln Gln Leu Ala Ala Tyr Ser Gln Gln Tyr Gln Ala  
 5630 5635 5640  
 Thr Leu Phe Met Ser Leu Leu Ala Gly Leu Ala Leu Val Leu Gly  
 5645 5650 5655  
 Arg Tyr Ala Asp Arg Lys Asp Val Cys Ile Gly Ala Thr Val Ser  
 5660 5665 5670  
 Gly Arg Asp Gln Leu Glu Leu Glu Glu Leu Ile Gly Phe Phe Ile  
 5675 5680 5685  
 Asn Ile Leu Pro Leu Arg Val Asp Leu Ser Gly Asp Pro Cys Leu  
 5690 5695 5700  
 Glu Glu Val Leu Leu Arg Thr Arg Gln Val Val Leu Asp Gly Phe  
 5705 5710 5715  
 Ala His Gln Ser Val Pro Phe Glu His Val Leu Gln Ala Leu Arg  
 5720 5725 5730  
 Arg Gln Arg Asp Ser Ser Gln Ile Pro Leu Val Pro Val Met Leu

5735

5740

5745

Arg	His	Gln	Asn	Phe	Pro	Thr	Gln	Glu	Ile	Gly	Asp	Trp	Pro	Glu
5750						5755					5760			
Gly	Val	Arg	Leu	Thr	Gln	Met	Glu	Leu	Gly	Leu	Asp	Arg	Ser	Thr
5765						5770					5775			
Pro	Ser	Glu	Leu	Asp	Trp	Gln	Phe	Tyr	Gly	Asp	Gly	Ser	Ser	Leu
5780						5785					5790			
Glu	Leu	Thr	Leu	Glu	Tyr	Ala	Gln	Asp	Leu	Phe	Asp	Glu	Ala	Thr
5795						5800					5805			
Val	Arg	Arg	Met	Ile	Ala	His	His	Gln	Gln	Ala	Leu	Glu	Ala	Met
5810						5815					5820			
Val	Ser	Arg	Pro	Gln	Leu	Arg	Val	Gly	Lys	Trp	Asp	Met	Leu	Thr
5825						5830					5835			
Ala	Glu	Glu	Arg	Arg	Leu	Phe	Ala	Ala	Leu	Asn	Ala	Thr	Gly	Thr
5840						5845					5850			
Pro	Arg	Glu	Trp	Pro	Ser	Leu	Ala	Gln	Gln	Phe	Glu	Arg	Gln	Ala
5855						5860					5865			
Gln	Ala	Thr	Pro	Gln	Ala	Ile	Ala	Cys	Val	Ser	Asp	Gly	Gln	Ser
5870						5875					5880			
Trp	Ser	Tyr	Ala	Gln	Leu	Glu	Ala	Arg	Ala	Asn	Gln	Leu	Ala	Gln
5885						5890					5895			
Ala	Leu	Arg	Gly	Gln	Gly	Ala	Gly	Arg	Asp	Val	Arg	Val	Ala	Val
5900						5905					5910			
Gln	Ser	Ala	Arg	Thr	Pro	Glu	Leu	Leu	Met	Ala	Leu	Leu	Ala	Ile
5915						5920					5925			
Phe	Lys	Ala	Gly	Ala	Cys	Tyr	Val	Pro	Ile	Asp	Pro	Ala	Tyr	Pro
5930						5935					5940			
Ala	Ala	Tyr	Arg	Glu	Gln	Ile	Leu	Ala	Glu	Val	Gln	Val	Ser	Ile
5945						5950					5955			
Val	Leu	Glu	Gln	Gly	Glu	Leu	Ala	Leu	Asp	Glu	Gln	Gly	Gln	Phe
5960						5965					5970			
Arg	Asn	Arg	Arg	Trp	Arg	Glu	Gln	Ala	Pro	Thr	Pro	Leu	Gly	Leu
5975						5980					5985			
Arg	Gly	His	Pro	Gly	Asp	Leu	Ala	Cys	Val	Met	Val	Thr	Ser	Gly
5990						5995					6000			
Ser	Thr	Gly	Arg	Pro	Lys	Gly	Val	Met	Val	Pro	Tyr	Ala	Gln	Leu
6005						6010					6015			
His	Asn	Trp	Leu	His	Ala	Gly	Trp	Gln	Arg	Ser	Ala	Phe	Glu	Ala
6020						6025					6030			
Gly	Glu	Arg	Val	Leu	Gln	Lys	Thr	Ser	Ile	Ala	Phe	Ala	Val	Ser
6035						6040					6045			

Val Lys Glu Leu Leu Ser Gly Leu Leu Ala Gly Val Gly Gln Val  
 6050 6055 6060  
 Met Leu Pro Asp Glu Gln Val Lys Asp Ser Leu Ala Leu Ala Arg  
 6065 6070 6075  
 Ala Ile Glu Gln Trp Gln Val Thr Arg Leu Tyr Leu Val Pro Ser  
 6080 6085 6090  
 His Leu Gln Ala Leu Leu Asp Ala Thr Gln Gly Arg Asp Gly Leu  
 6095 6100 6105  
 Leu His Ser Leu Arg His Val Val Thr Ala Gly Glu Ala Leu Pro  
 6110 6115 6120  
 Ser Ala Val Gly Glu Ala Val Arg Val Arg Leu Pro Gln Val Gln  
 6125 6130 6135  
 Leu Trp Asn Asn Tyr Gly Cys Thr Glu Leu Asn Asp Ala Thr Tyr  
 6140 6145 6150  
 His Arg Ser Asp Thr Val Ala Pro Gly Thr Phe Val Pro Ile Gly  
 6155 6160 6165  
 Ala Pro Ile Ala Asn Thr Glu Val Tyr Val Leu Asp Arg Gln Leu  
 6170 6175 6180  
 Arg Gln Val Pro Ile Gly Val Met Gly Glu Leu His Val His Ser  
 6185 6190 6195  
 Val Gly Met Ala Arg Gly Tyr Trp Asn Arg Pro Gly Leu Thr Ala  
 6200 6205 6210  
 Ser Arg Phe Ile Ala His Pro Tyr Ser Glu Glu Pro Gly Thr Arg  
 6215 6220 6225  
 Leu Tyr Lys Thr Gly Asp Met Val Arg Arg Leu Ala Asp Gly Thr  
 6230 6235 6240  
 Leu Glu Tyr Leu Gly Arg Gln Asp Phe Glu Val Lys Val Arg Gly  
 6245 6250 6255  
 His Arg Val Asp Thr Arg Gln Val Glu Ala Ala Leu Arg Ala Gln  
 6260 6265 6270  
 Pro Ala Val Ala Glu Ala Val Val Ser Gly His Arg Val Asp Gly  
 6275 6280 6285  
 Asp Met Gln Leu Val Ala Tyr Val Val Ala Arg Glu Gly Gln Ala  
 6290 6295 6300  
 Pro Ser Ala Gly Glu Leu Lys Gln Gln Leu Ser Ala Gln Leu Pro  
 6305 6310 6315  
 Thr Tyr Met Leu Pro Thr Val Tyr Gln Trp Leu Glu Gln Leu Pro  
 6320 6325 6330  
 Arg Leu Ser Asn Gly Lys Leu Asp Arg Leu Ala Leu Pro Ala Pro  
 6335 6340 6345  
 Gln Val Val His Ala Gln Glu Tyr Val Ala Pro Arg Asn Glu Ala

6350	6355	6360
Glu Gln Arg Leu Ala Ala Leu	Phe Ala Glu Val Leu	Arg Val Glu
6365	6370	6375
Gln Val Gly Ile His Asp Asn	Phe Phe Ala Leu Gly	Gly His Ser
6380	6385	6390
Leu Ser Ala Ser Gln Leu Ile	Ser Arg Ile Arg Gln	Ser Phe His
6395	6400	6405
Val Asp Leu Pro Leu Ser Arg	Ile Phe Glu Ala Pro	Thr Ile Glu
6410	6415	6420
Gly Leu Val Arg Gln Leu Ala	Leu Pro Ser Glu Gly	Gly Val Ala
6425	6430	6435
Ser Ile Ala Arg Val Ala Arg	Asn Arg Thr Ile Pro	Leu Ser Leu
6440	6445	6450
Phe Gln Glu Arg Leu Trp Phe	Val His Gln His Met	Pro Glu Gln
6455	6460	6465
Arg Thr Ser Tyr Asn Gly Thr	Leu Ala Leu Arg Leu	Arg Gly Pro
6470	6475	6480
Leu Ser Val Glu Ala Met Arg	Ala Ala Leu Arg Ala	Leu Val Leu
6485	6490	6495
Arg His Glu Ile Leu Arg Thr	Arg Phe Val Leu Pro	Thr Gly Ala
6500	6505	6510
Ser Glu Pro Val Gln Val Ile	Asp Glu His Ser Asp	Phe Gln Leu
6515	6520	6525
Ser Val Gln Leu Val Glu Asp	Thr Glu Ile Ala Ser	Leu Met Asp
6530	6535	6540
Glu Leu Ala Ser His Ile Tyr	Asp Leu Ala Asn Gly	Pro Leu Phe
6545	6550	6555
Ile Ala Cys Leu Leu Gln Leu	Asp Glu Gln Glu His	Val Leu Leu
6560	6565	6570
Ile Gly Met His His Leu Ile	Tyr Asp Ala Trp Ser	Gln Phe Thr
6575	6580	6585
Val Met Asn Arg Asp Leu Arg	Val Leu Tyr His Arg	His Leu Gly
6590	6595	6600
Leu Ala Gly Gly Asp Leu Pro	Glu Leu Pro Ile Gln	Tyr Ala Asp
6605	6610	6615
Tyr Ala Ile Trp Gln Arg Ala	Gln Asn Leu Asp Ala	Gln Leu Ala
6620	6625	6630
Tyr Trp Gln Ala Met Leu His	Asp Tyr Asp Asp Gly	Leu Glu Leu
6635	6640	6645
Pro Tyr Asp Tyr Pro Arg Pro	Arg Asn Arg Thr Trp	His Ala Ala
6650	6655	6660

Val Tyr Thr His Thr Tyr Pro Ala Glu Leu Val Gln Arg Phe Ala  
 6665 6670 6675  
 Gly Phe Val Gln Ala His Gln Ser Thr Leu Phe Ile Gly Leu Leu  
 6680 6685 6690  
 Ala Ser Phe Ala Val Val Leu Asn Lys Tyr Thr Gly Arg Asp Asp  
 6695 6700 6705  
 Leu Cys Ile Gly Thr Thr Ala Gly Arg Thr His Leu Glu Leu  
 6710 6715 6720  
 Glu Asn Leu Ile Gly Phe Phe Ile Asn Ile Leu Pro Leu Arg Leu  
 6725 6730 6735  
 Arg Leu Asp Gly Asp Pro Asp Val Ala Glu Ile Met Arg Arg Thr  
 6740 6745 6750  
 Arg Leu Val Ala Met Ser Ala Phe Glu Asn Gln Ala Leu Pro Phe  
 6755 6760 6765  
 Glu His Leu Leu Asn Ala Leu His Lys Gln Arg Asp Thr Ser Arg  
 6770 6775 6780  
 Ile Pro Leu Val Pro Val Val Met Arg His Gln Asn Phe Pro Asp  
 6785 6790 6795  
 Thr Ile Gly Asp Trp Ser Asp Gly Ile Arg Thr Glu Val Ile Gln  
 6800 6805 6810  
 Arg Asp Leu Arg Ala Thr Pro Asn Glu Met Asp Leu Gln Phe Phe  
 6815 6820 6825  
 Gly Asp Gly Thr Gly Leu Ser Val Thr Val Glu Tyr Ala Ala Glu  
 6830 6835 6840  
 Leu Phe Ser Glu Ala Thr Ile Arg Arg Leu Ile His His His Gln  
 6845 6850 6855  
 Leu Val Leu Glu Gln Met Leu Ala Ala His Glu Ser Ala Thr Cys  
 6860 6865 6870  
 Pro Leu Asp Val Ala Asp  
 6875  
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 <211> 343  
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 <213> Xanthomonas albilineans  
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 1 5 10 15  
 Thr Thr Val Asn Ala Tyr Tyr Arg Thr Ala Ala Val Lys Ala Ala Ile  
 20 25 30  
 Glu Leu Gly Leu Phe Asp Val Val Gly Gln Gln Gly Arg Thr Pro Ala  
 35 40 45

Ala Ile Ala Glu Ala Cys Gln Ala Ser Pro Arg Gly Ile Arg Ile Leu  
50 55 60

Cys Tyr Tyr Leu Val Ser Ile Gly Phe Leu Arg Arg Asn Gly Gly Leu  
65 70 75 80

Phe Tyr Ile Asp Arg Asn Met Ala Met Tyr Leu Asp Arg Ser Ser Pro  
85 90 95

Gly Tyr Leu Gly Gly Ser Ile Lys Phe Leu Leu Ser Pro Tyr Ile Met  
100 105 110

Ser Ala Phe Thr Asp Leu Thr Ala Val Val Arg Thr Gly Lys Ile Asn  
115 120 125

Leu Ala Gln Asp Gly Val Val Ala Pro Asp His Pro Gln Trp Val Glu  
130 135 140

Phe Ala Arg Ala Met Ala Pro Met Met Ala Leu Pro Ser Ala Leu Ile  
145 150 155 160

Ala Asn Met Val Ser Leu Pro Ala Asp Arg Pro Ile Arg Val Leu Asp  
165 170 175

Val Ala Ala Gly His Gly Leu Phe Gly Ile Ala Phe Ala Gln Arg Phe  
180 185 190

Arg Gln Ala Glu Val Ser Phe Leu Asp Trp Asp Asn Val Leu Asp Val  
195 200 205

Ala Arg Glu Asn Ala Gln Ala Ala Lys Val Ala Glu Arg Ala Arg Phe  
210 215 220

Leu Pro Gly Asn Ala Phe Asp Leu Asp Tyr Gly Ser Gly Tyr Asp Val  
225 230 235 240

Ile Leu Leu Thr Asn Phe Leu His His Phe Asp Glu Val Asp Gly Glu  
245 250 255

Arg Ile Leu Ala Lys Thr Arg Asp Ala Leu Asn Asp Asp Gly Met Val  
260 265 270

Ile Thr Phe Glu Phe Ile Ala Asp Glu Glu Arg Ser Ser Pro Pro Leu  
275 280 285

Ala Ala Thr Phe Ser Met Met Met Leu Gly Thr Thr Pro Ala Gly Glu  
290 295 300

Ser Tyr Thr Tyr Ser Asp Leu Glu Arg Met Phe Arg His Ala Gly Phe  
305 310 315 320

Gly His Val Glu Leu Lys Ser Ile Pro Pro Ala Leu Leu Lys Val Val  
325 330 335

Val Ser Arg Lys Arg Ala Pro  
340

<210> 28  
<211> 167

&lt;212&gt; PRT

&lt;213&gt; Xanthomonas albilineans

&lt;400&gt; 28

Met Ile Glu Ser Ala Thr Ser Pro Val Ala Lys Thr Glu Arg Ile Trp  
 1 5 10 15

Cys Thr Glu Leu Asp Leu Asp Ala Leu Asn Ala Met Ser Ala Asn Thr  
 20 25 30

Met Gln Ala Leu Leu Gly Ile Arg Met Ile Glu Ile Gly Ser Asp Tyr  
 35 40 45

Leu Val Ser Cys Met Ser Val Asp Trp Arg Cys His Gln Pro Tyr Gly  
 50 55 60

Val Leu His Gly Gly Ala Ser Val Thr Leu Ala Glu Ala Thr Gly Ser  
 65 70 75 80

Met Ala Ala Ser Met Cys Val Pro Ala Gly Gln Arg Cys Val Gly Leu  
 85 90 95

Asp Ile Asn Ala Asn His Ile Ala Ser Ile Ser Ser Gly Gln Val Gln  
 100 105 110

Cys Ile Ala Arg Pro Leu His Ile Gly Ala Leu Thr Gln Val Trp Gln  
 115 120 125

Met Arg Ile Tyr Asp Glu Gly Asp Arg Thr Ile Cys Val Ser Arg Leu  
 130 135 140

Thr Met Ala Val Leu Ser Val His Val Ala Arg Val Ser Pro Asn Pro  
 145 150 155 160

Ala Ser Ser Gly Val Gln Thr  
 165

&lt;210&gt; 29

&lt;211&gt; 941

&lt;212&gt; PRT

&lt;213&gt; Xanthomonas albilineans

&lt;400&gt; 29

Met Asn Glu Thr Ala Thr Val Thr Lys Ala Thr Leu Ser Ser Ala Lys  
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Ala Ser Ile Thr Pro Ala Cys Val His Gln Trp Phe Glu Ala Gln Val  
 20 25 30

Ser Ser Thr Pro Asp Ala Pro Ala Ala Phe Leu Gly Glu Arg Arg Met  
 35 40 45

Ser Tyr Gly Gln Leu Asn Thr Arg Ala Asn Arg Leu Ala Arg Leu Leu  
 50 55 60

Gln Ser Gln Gly Val Gly Pro Gly Ala Arg Val Ala Val Trp Met Asn  
 65 70 75 80

Arg Ser Pro Glu Cys Leu Ala Ala Leu Leu Ala Val Met Lys Ala Gly  
 85 90 95  
 Ala Ala Tyr Val Pro Ile Asp Leu Ser Leu Pro Ile Arg Arg Val Gln  
 100 105 110  
 Tyr Ile Leu Gln Asp Ser Gln Ala Arg Leu Val Leu Val Asp Asp Glu  
 115 120 125  
 Gly Gln Gly Arg Leu Asp Glu Leu Glu Leu Gly Ala Met Thr Ala Val  
 130 135 140  
 Asp Val Cys Gly Thr Leu Asp Gly Asp Glu Ala Asn Leu Asp Leu Pro  
 145 150 155 160  
 Cys Asp Pro Ala Gln Pro Val Tyr Cys Ile Tyr Thr Ser Gly Ser Thr  
 165 170 175  
 Gly Ser Pro Lys Gly Val Leu Val Arg His Ser Gly Leu Ala Asn Tyr  
 180 185 190  
 Val Ala Trp Ala Lys Arg Gln Tyr Val Thr Ala Asp Thr Thr Ser Phe  
 195 200 205  
 Ala Phe Tyr Ser Ser Leu Ser Phe Asp Leu Thr Val Thr Ser Ile Tyr  
 210 215 220  
 Val Pro Leu Val Ala Gly Leu Cys Val His Val Tyr Pro Glu Gln Gly  
 225 230 235 240  
 Asp Asp Val Pro Val Ile Asn Arg Val Leu Asp Asp Asn Gln Val Asp  
 245 250 255  
 Val Ile Lys Leu Thr Pro Ser His Met Leu Met Leu Arg Asn Ala Ala  
 260 265 270  
 Leu Ala Thr Ser Arg Leu Lys Thr Leu Ile Val Gly Gly Glu Asp Leu  
 275 280 285  
 Lys Ala Ala Val Ala Tyr Asp Ile His Gln Arg Phe Arg Arg Asp Val  
 290 295 300  
 Ala Ile Tyr Asn Glu Tyr Gly Pro Thr Glu Thr Val Val Gly Cys Ala  
 305 310 315 320  
 Ile His Arg Tyr Asp Pro Ala Thr Glu Arg Glu Gly Ser Val Pro Ile  
 325 330 335  
 Gly Val Pro Ile Asp His Thr Ser Leu His Leu Leu Asp Glu Arg Leu  
 340 345 350  
 Gln Pro Val Ala Pro Gly Glu Val Gly Gln Ile His Ile Gly Gly Ala  
 355 360 365  
 Gly Val Ala Ile Gly Tyr Val Asn Lys Pro Glu Ile Thr Asp Ala Gln  
 370 375 380  
 Phe Ile Asp Asn Pro Phe Glu Gly Ser Gly Arg Leu Tyr Ala Ser Gly  
 385 390 395 400  
 Asp Leu Gly Arg Met Arg Ala Asp Gly Lys Leu Glu Phe Leu Gly Arg

405

410

415

Lys Asp Ser Gln Ile Lys Leu Arg Gly Tyr Arg Ile Glu Leu Gly Glu  
 420 425 430

Ile Glu Asn Val Leu Leu Gly His Ala Ala Leu Arg Glu Cys Ile Val  
 435 440 445

Asp Thr Thr Val Ala Pro Arg Arg Asp Tyr Asp Ser Lys Ser Leu Arg  
 450 455 460

Tyr Cys Ala Arg Cys Gly Ile Ala Ser Asn Phe Pro Asn Thr Ser Phe  
 465 470 475 480

Asp Glu His Gly Val Cys Asn His Cys His Ala Tyr Asp Lys Tyr Arg  
 485 490 495

Asn Val Val Glu Asp Tyr Phe Arg Thr Glu Asp Glu Leu Arg Thr Ile  
 500 505 510

Phe Glu Gln Val Lys Ala His Asn Arg Leu Arg Tyr Asp Cys Leu Val  
 515 520 525

Ala Phe Ser Gly Gly Lys Asp Ser Thr Tyr Ala Leu Cys Arg Val Val  
 530 535 540

Asp Met Gly Leu Arg Val Leu Ala Tyr Thr Leu Asp Asn Gly Tyr Ile  
 545 550 555 560

Ser Asp Glu Ala Lys Ala Asn Val Asp Arg Val Val Arg Glu Leu Gly  
 565 570 575

Val Asp His Arg Tyr Leu Gly Thr Pro His Met Asn Ala Ile Phe Val  
 580 585 590

Asp Ser Leu His Arg His Ser Asn Val Cys Asn Gly Cys Phe Lys Thr  
 595 600 605

Ile Tyr Thr Leu Gly Ile Asn Leu Ala His Glu Val Gly Val Ser Asp  
 610 615 620

Ile Val Met Gly Leu Ser Lys Gly Gln Leu Phe Glu Thr Arg Leu Ser  
 625 630 635 640

Glu Leu Phe Arg Ala Ser Thr Phe Asp Asn Gln Val Phe Glu Lys Asn  
 645 650 655

Leu Met Glu Ala Arg Lys Ile Tyr His Arg Ile Asp Asp Ala Ala Ala  
 660 665 670

Arg Leu Leu Asp Thr Ser Cys Val Arg Asn Asp Arg Leu Leu Glu Ser  
 675 680 685

Thr Arg Phe Ile Asp Phe Tyr Arg Tyr Cys Ser Val Ser Arg Lys Asp  
 690 695 700

Met Tyr Arg Tyr Ile Ala Glu Arg Val Gly Trp Ser Arg Pro Ala Asp  
 705 710 715 720

Thr Gly Arg Ser Thr Asn Cys Leu Leu Asn Asp Val Gly Ile Tyr Met  
 725 730 735

His Lys Lys Gln Arg Gly Tyr His Asn Tyr Ser Leu Pro Tyr Ser Trp  
 740 745 750  
 Asp Val Arg Val Gly His Ile Pro Arg Glu Asp Ala Met Arg Glu Leu  
 755 760 765  
 Glu Asp Thr Asp Asp Ile Asp Glu Ala Lys Val Leu Gly Leu Leu Lys  
 770 775 780  
 Gln Ile Gly Tyr Asp Ser Ser Leu Ile Asp Thr Gln Ala Gly Asp Ala  
 785 790 795 800  
 Gln Leu Ile Ala Tyr Tyr Val Ala Ala Glu Glu Leu Asp Pro Val Ala  
 805 810 815  
 Leu Arg Asn Phe Ala Ala Ala Ile Leu Pro Glu Tyr Met Leu Pro Ser  
 820 825 830  
 Tyr Phe Val Arg Leu Asp Arg Met Pro Leu Thr Pro Asn Gly Lys Val  
 835 840 845  
 Asn Arg Arg Ala Leu Pro Arg Pro Glu Leu Lys Lys Asn Ala Ser Glu  
 850 855 860  
 Ala His Thr Glu Pro Ser Ser Ala Leu Glu Gln Glu Leu Val Gln Ile  
 865 870 875 880  
 Trp Lys Glu Val Leu Met Val Asp Lys Val Gly Val Arg Asp Asn Phe  
 885 890 895  
 Phe Glu Leu Gly Gly His Ser Leu Ser Ala Leu Met Leu Leu Tyr Ser  
 900 905 910  
 Ile Ala Glu Arg Tyr Gln Lys Met Val Ser Ile Gln Ala Phe Ser Val  
 915 920 925  
 Asn Pro Thr Ile Glu Gly Leu Ser Glu His Leu Val Ala  
 930 935 940

<210> 30  
 <211> 239  
 <212> PRT  
 <213> Xanthomonas albilineans

<400> 30

Met Asp Leu Gln Cys Ala Arg Ile Ala Ala Leu Cys Glu Gln Leu Lys  
 1 5 10 15  
 Leu Ala Arg Leu Ser Ser Asp Trp Gln Ala Leu Ala Gln Ala Ala Ala  
 20 25 30  
 Cys Glu Asp Ala Ser Tyr Phe Leu Glu Lys Val Leu Ala Ser Glu Gln  
 35 40 45  
 Leu Ala Arg Glu Glu Arg Lys Arg Thr Val Leu Thr Arg Leu Ala Arg  
 50 55 60  
 Met Pro Ser Ile Lys Thr Leu Glu Gln Phe Asp Trp Ala Gln Ala Gly

65	70	75	80
Gly Ala Ser Lys Ala Gln Ile Val Glu Leu Gly His Leu Thr Phe Val			
85	90		95
Glu Arg Ala Glu Asn Val Val Met Leu Gly Pro Ser Gly Val Gly Lys			
100	105		110
Thr His Ile Ala Leu Ala Leu Cys Gln Arg Ala Val Met Ala Gly His			
115	120		125
Lys Ala Arg Phe Ile Thr Ala Ala Asp Leu Met Met Gln Leu Ala Ala			
130	135		140
Val Lys Ala Gln Asn Arg Leu Lys Asp Tyr Phe Asn Arg Ala Val Leu			
145	150		155
160			
Gly Pro Lys Leu Leu Val Val Asp Glu Ile Gly Tyr Leu Pro Phe Gly			
165	170		175
Arg Glu Pro Ala Gln Gly Cys Trp Ala Ala Thr Gly Phe Ala Leu Arg			
180	185		190
Ser Leu Ala Ala Arg Arg Trp Lys Thr Pro Gly Gly Ser Asp Leu Leu			
195	200		205
Arg Arg Phe Lys Gly Lys Trp Val Lys Phe Lys Ser Ala Leu Thr Ala			
210	215		220
Asp Val Val Tyr Leu Ile Phe Arg Leu Arg Gly Ser Asp His Pro			
225	230		235

<210> 31  
 <211> 286  
 <212> PRT  
 <213> Xanthomonas albilineans

<400> 31

Met Pro Arg Ile Glu Tyr Cys Ile Ser Met Met His Arg Arg Lys Pro			
1	5	10	15
Thr Thr Asn Arg Ser Val Cys Met Arg Asp Ile Glu Arg Thr Ala Leu			
20	25		30
Trp Val Ala Gly Met Arg Ala Leu Glu Ser Glu Arg Glu Gln Ala Leu			
35	40	45	
Phe His Asp Pro Phe Ala Arg Arg Leu Ala Gly Asp Glu Phe Val Glu			
50	55	60	
Glu Leu Arg Arg Asn Asn Gln Asn Val Pro Met Pro Pro Ala Ile Glu			
65	70	75	80
Val Arg Thr Arg Trp Leu Asp Asp Lys Ile Met Gln Ala Val Ser Glu			
85	90		95
Gly Ile Gly Gln Val Val Ile Leu Ala Ala Gly Met Asp Ala Arg Ala			
100	105		110

Tyr Arg Leu Pro Trp Pro Ser Asp Thr Arg Val Tyr Glu Ile Asp His  
 115 120 125  
 Met Asp Val Leu Ser Asp Lys His Glu Lys Leu His Asp Ala Gln Pro  
 130 135 140  
 Val Cys Gln Arg Ile Ala Leu Pro Ile Asp Leu Arg Glu Asp Trp Pro  
 145 150 155 160  
 Gln Ala Leu Lys Glu Ser Gly Phe Val Gly Ser Ala Ala Thr Leu Trp  
 165 170 175  
 Leu Val Glu Gly Leu Leu Cys Tyr Leu Ser Ala Glu Ala Val Met Leu  
 180 185 190  
 Leu Phe Ala Arg Ile Asp Ala Leu Ser Ala Lys Gly Ser Ser Val Leu  
 195 200 205  
 Phe Asp Val Ile Gly Leu Ser Met Leu Asn Ser Pro Asn Ala Arg Val  
 210 215 220  
 Leu His Ala Met Ala Arg Gln Phe Gly Thr Asp Glu Pro Glu Ser Leu  
 225 230 235 240  
 Ile Gln Pro Leu Gly Trp Glu Pro Gly Val Leu Thr Ile Ala Ala Ala  
 245 250 255  
 Gly Gln Gln Met Gly Arg Trp Pro Phe Pro Val Ala Pro Arg Gly Thr  
 260 265 270  
 His Gly Val Pro Gln Ser Tyr Leu Val His Ala Leu Lys Arg  
 275 280 285

<210> 32  
 <211> 765  
 <212> PRT  
 <213> Xanthomonas albilineans  
 <400> 32

Met Arg Arg Ser Pro Tyr Pro Arg Thr Leu Met Asp Ser Pro Leu Thr  
 1 5 10 15  
 Asn Leu Pro Met His Ser Gly Thr Glu Leu Asp Leu Arg Trp Ser Val  
 20 25 30  
 Gly Gln Thr Arg Pro Gly Arg Asn Glu Ala Tyr Ala Arg Gln Trp Thr  
 35 40 45  
 Thr Leu Leu His Gln Trp Arg Arg Asp Tyr Pro Gly Leu Arg Ile Asp  
 50 55 60  
 Val Ser Asp Thr Pro Ile Gly Gln His Ile Thr Ile Asp Tyr Ala Ala  
 65 70 75 80  
 Pro Tyr Pro Cys Gly Ser Phe Gly Ser Leu Leu Arg Glu Tyr Ala Arg  
 85 90 95  
 Leu Gly Lys Leu Ala Gly Leu Ile Cys Asp Tyr Leu Lys His Arg His  
 100 105 110

Gln Ile Val Leu Ser Glu Ser Pro Pro Gly Ala Asn Thr Leu Ala Leu  
 115 120 125

Asp Leu Gly Arg Ile Glu Glu Pro Lys Gln Leu Asp Arg Leu Gln Gly  
 130 135 140

Ala Leu Gly Met Ala Leu Glu Ala Leu Ala Thr Arg Arg Ser Asp Gly  
 145 150 155 160

Leu Leu Leu Trp His Ala Asp His Arg Gln Arg Asn Leu Pro Asp Leu  
 165 170 175

Arg Asp Ser Ala Val Cys Gly Ser Ala Ala Gln Ile Ser Leu Pro Ala  
 180 185 190

Leu Ser Cys Val Glu Asp Leu Ile Glu Val Asp Thr Ser Leu Leu Ala  
 195 200 205

Cys Asp His Gly Lys Leu Cys Gln Ile Ala Ser His Leu Pro Ala Ser  
 210 215 220

Trp Phe Ala Arg Ser Thr Asp Gly Pro Met Pro Ser Trp Ser Asp Ala  
 225 230 235 240

Ser Thr Ala Val Phe Ala Cys Ala Pro Ile Gly Phe Leu Pro Ser Val  
 245 250 255

Gln Val Asn Val Cys Ala Gln Ile Phe Ser Ala Ala His Leu Ala Ser  
 260 265 270

Thr Ala Gln Met Ile Asp Pro Leu Arg Gln Gln Ala Phe Ser Tyr Arg  
 275 280 285

Gln Leu Arg Ser Arg Ala Ala Thr Tyr Ala Arg His Leu Ser Leu Leu  
 290 295 300

Gly Leu Gln Ser Gly Asp Ala Val Ala Leu Ile Ala Ile Asp Ser Leu  
 305 310 315 320

Ala Gly Val Ala Leu Met Leu Ala Cys Leu Ala Gly Gly Leu Val Phe  
 325 330 335

Ala Pro Ile Asn Glu Leu Val Ser Leu Val His Phe Glu Thr Thr Leu  
 340 345 350

Lys Thr Ile Lys Pro Arg Leu Val Leu Ile Asp Ala Glu Leu Pro Pro  
 355 360 365

Ser His His Ala Ala Leu Arg His Leu Pro Thr Leu Glu Leu Thr Ser  
 370 375 380

Leu Met Pro Val Ile Glu Asn Asp Glu Leu Val Val Ala Pro Cys Ser  
 385 390 395 400

Ala Asp Ala Pro Ala Val Met Ile Cys Thr Ser Gly Ser Thr Gly Thr  
 405 410 415

Pro Lys Ala Val Thr His Ser His Ala Asp Phe Met His Cys His Leu  
 420 425 430

Asn Tyr Gln Gln Ala Val Leu Gly Leu Arg Ser Asp Asp Val Met Tyr  
 435 440 445  
 Thr Pro Ser Arg Leu Phe Phe Ala Tyr Gly Leu Asn Asn Leu Met Leu  
 450 455 460  
 Ser Leu Leu Ala Gly Val Ser His Val Ile Ala Ala Pro Leu Ser Val  
 465 470 475 480  
 Arg Gln Ile Ala Gln Thr Ile His Thr Tyr His Val Thr Val Leu Leu  
 485 490 495  
 Ala Val Pro Ala Val Phe Lys Leu Leu Ala Glu Ala Ala Pro Asp  
 500 505 510  
 Ala Val Trp Pro Ala Leu Arg Leu Cys Ile Ser Ala Gly Glu Ser Leu  
 515 520 525  
 Pro Ala Arg Leu Gly His Ala Ile Ser Thr Arg Trp Gln Val Glu Val  
 530 535 540  
 Leu Asp Gly Ile Gly Cys Thr Glu Val Leu Ser Thr Phe Ile Ser Asn  
 545 550 555 560  
 Arg Pro Gly His Ala Leu Met Gly Cys Thr Gly Thr Pro Val Pro Gly  
 565 570 575  
 Phe Val Val Lys Leu Val Asn Lys Gln Gly Glu Ile Cys Arg Ile Gly  
 580 585 590  
 Glu Val Gly Ser Leu Trp Val Arg Gly Asn Thr Leu Thr Arg Gly Tyr  
 595 600 605  
 Val Gly Asp Pro Ile Leu Ser Ala Gln Leu Phe Val Asp Gly Trp Phe  
 610 615 620  
 Asp Thr Arg Asp Leu Phe Phe Ala Asp Ala Lys Gly Arg Phe His Asn  
 625 630 635 640  
 Leu Gly Arg Met Gly Ser Ala Ile Lys Ile Asn Gly Cys Trp Leu Ser  
 645 650 655  
 Pro Glu Thr Leu Glu Ser Val Ile Gln Thr His Ala Cys Val Lys Glu  
 660 665 670  
 Cys Ala Ile Cys Leu Ile Glu Asp Glu Phe Gly Leu Pro Arg Pro Ala  
 675 680 685  
 Ala Phe Val Val Pro Val Asp Ala Ser Ile Asp Thr Gly Ala Leu Trp  
 690 695 700  
 Ala Ala Leu Arg Ala Leu Cys Lys Asn Ala Leu Gly Lys His His Tyr  
 705 710 715 720  
 Pro His Leu Phe Val Glu Val Ser Thr Ile Pro Arg Thr Cys Ser Gly  
 725 730 735  
 Lys Val Ile Arg Pro Ala Leu Leu Glu Thr Leu Ala Ser Ala Lys His  
 740 745 750  
 Leu Gln Ser His Leu Phe Phe Val Gly His Ala Arg Thr

755

760

765

<210> 33  
<211> 330  
<212> PRT  
<213> Xanthomonas albilineans

<400> 33

Met His Thr Asn Ala Asp Leu Pro Leu Thr Ile Lys Ala Asp Ser Ala  
1 5 10 15  
Glu Ala Thr Leu Thr Asp Trp Asn Ala Thr His Arg Ala Thr Trp Pro  
20 25 30

Thr Leu Leu Trp Gln His Arg Ala Leu Leu Phe Arg Gly Phe Ala His  
35 40 45

Pro Gly Gly Leu Glu Gln Ile Ser Arg Cys Phe Phe Asp Glu Arg Leu  
50 55 60

Ala Tyr Thr Tyr Arg Ser Thr Pro Arg Thr Asp Val Gly Gln His Val  
65 70 75 80

Tyr Thr Ala Thr Glu Tyr Pro Arg Gln Leu Ser Ile Ala Gln His Cys  
85 90 95

Glu Asn Ala Tyr Gln Arg Val Trp Pro Met Lys Leu Leu Phe His Cys  
100 105 110

Val Gln Pro Ala Ser Glu Gly Gly Cys Thr Pro Leu Ala Asp Met Leu  
115 120 125

Lys Val Thr Ala Ala Ile Asp Pro Gln Val Arg Glu Ile Phe Ala Arg  
130 135 140

Lys Gln Val Arg Tyr Val Arg Asn Tyr Arg Ala Gly Val Asp Leu Pro  
145 150 155 160

Trp Glu Asp Val Phe Asn Thr Arg Asn Lys Gln Glu Val Glu Ala Tyr  
165 170 175

Cys Ala Arg Asn Asp Met Gln Cys Glu Trp Thr Gly Asp Gly Leu Arg  
180 185 190

Thr Ser Gln Ile Cys Arg Ala Phe Ala Cys His Pro Ala Thr Gly Asp  
195 200 205

Glu Val Trp Phe Asn Gln Ala His Leu Phe His Tyr Thr Ala Leu Glu  
210 215 220

Ala Ala Ala Gln Lys Met Met Leu Ser Phe Phe Gly Glu Gln Gly Leu  
225 230 235 240

Pro Arg Asn Ala Tyr Phe Gly Asp Gly Thr Pro Ile Asp Pro Ala Met  
245 250 255

Leu Asp His Val Arg Thr Val Phe Ala Gln His Lys Ile His Phe Asp  
260 265 270

Trp His Arg Asp Asp Val Leu Leu Ile Asp Asn Met Leu Val Ser His

275

280

285

Gly Arg Glu Pro Tyr Glu Gly Ser Arg Lys Ile Leu Val Cys Met Ala  
 290 295 300

Glu Pro Tyr Ser Pro Glu Gln Ser Ser Pro Asp Ile Ala Ala Arg Ser  
 305 310 315 320

Asp Gly Glu Ala Met Leu Lys Leu His Val  
 325 330

<210> 34

<211> 1959

<212> PRT

<213> Xanthomonas albilineans

<400> 34

Met Lys Leu Ser Ser Met Ser Leu Leu Asp Ala Glu Asp Val Ala Leu  
 1 5 10 15

Thr Ala Ala Ser Pro Asp Thr Ala Leu Ala Leu Asp Trp Ser Arg Ser  
 20 25 30

Val Leu Asp Leu Phe Asp Ala Gln Val Ala Leu His Ala Glu Glu Leu  
 35 40 45

Ala Cys Ala Asp Gln His Arg Gln Leu Ser Tyr Ala Gln Leu Asp Gln  
 50 55 60

His Ala Asn Arg Leu Ala His Cys Leu Ile Glu Arg Gly Leu Arg Pro  
 65 70 75 80

Gln Glu Arg Val Ala Leu Trp Phe Gly Arg Ser Pro Asp Phe Leu Ile  
 85 90 95

Ala Leu Leu Gly Val Leu Lys Ala Gly Gly Cys Tyr Val Pro Leu Asp  
 100 105 110

Pro His Tyr Pro Thr Thr Tyr Ile Gln Gln Ile Leu Asp Asp Ala Gln  
 115 120 125

;

Pro Arg Leu Leu Leu Cys Gly Lys Asp Ile Asp Gly Gln Leu Ile Gln  
 130 135 140

Val Pro Arg Leu Arg Leu Asp Asp Ala Ala Ile Ala Arg Gln Pro His  
 145 150 155 160

Thr Pro Leu Pro His Ala Leu His Pro Ala Gln Leu Ala Tyr Val Met  
 165 170 175

Tyr Thr Ser Gly Ser Thr Gly Arg Pro Lys Gly Val Met Val Pro His  
 180 185 190

Arg Gln Ile Leu Asn Trp Leu His Ala Leu Trp Ala Arg Ala Pro Phe  
 195 200 205

Glu Ala Gly Glu Arg Val Ala Gln Lys Thr Ser Ile Ala Phe Ala Ile  
 210 215 220

Ser Val Lys Glu Leu Leu Ala Gly Leu Leu Ala Gly Val Pro Gln Val  
 225 230 235 240  
 Phe Ile Asp Glu Asp Thr Val Arg Asp Ile Pro Ala Phe Val Arg Ala  
 245 250 255  
 Leu Glu Thr Trp Gln Ile Thr Arg Leu Tyr Thr Phe Pro Ser Gln Leu  
 260 265 270  
 Asn Ala Leu Leu Asp His Val Ala Glu Thr Pro Gln Arg Leu Ala Arg  
 275 280 285  
 Leu Arg Gln Leu Phe Val Ser Ile Glu Pro Cys Pro Ala Glu Leu Leu  
 290 295 300  
 Gln Arg Leu Arg Thr Leu Leu Pro Ala Cys Thr Ala Trp Tyr Ile Tyr  
 305 310 315 320  
 Gly Cys Thr Glu Ile Asn Asp Met Thr Tyr Cys Asp Pro Ala Glu Gln  
 325 330 335  
 His Ser Gly Ser Gly Phe Val Pro Val Gly Arg Pro Ile Ala Asn Thr  
 340 345 350  
 Lys Val His Val Leu Asp Glu Gln Leu Arg Pro Leu Pro Pro Gly Ile  
 355 360 365  
 Met Gly Glu Val His Ile Glu Ser Leu Gly Ile Thr His Gly Tyr Trp  
 370 375 380  
 Arg Gln Gly Leu Thr Ala Ala Arg Phe Ile Ala Asn Pro Tyr Gly  
 385 390 395 400  
 Pro Pro Gly Ser Arg Leu Tyr Arg Thr Gly Asp Met Ala Arg Leu Leu  
 405 410 415  
 Asp Asn Gly Thr Leu Glu Leu Leu Gly Arg Arg Asp Tyr Glu Val Lys  
 420 425 430  
 Val Arg Gly Tyr Arg Val Asp Val Arg Gln Val Glu Lys Ala Leu Ala  
 435 440 445  
 Ala His Leu Gln Val Ala Glu Ala Ala Val Ile Gly Trp Pro Gln Gly  
 450 455 460  
 Ser Pro Thr Pro Glu Leu Leu Ala Tyr Val Val Pro Arg Gln Gly Val  
 465 470 475 480  
 Leu Asn Leu Asp Glu Leu Arg Lys Leu Leu Gln Glu Arg Leu Pro Thr  
 485 490 495  
 Tyr Met Leu Pro Thr Arg Phe Gln Ser Leu Pro Ala Leu Pro Arg Leu  
 500 505 510  
 Pro Asn Gly Lys Leu Asp Thr Leu Ser Leu Pro Glu Pro Gln Ala Ala  
 515 520 525  
 Ser Ser Asp Ser Asp Tyr Leu Ala Pro Arg Ser Glu Val Glu Ile Thr  
 530 535 540  
 Leu Ala Lys Leu Trp Ser Glu Leu Leu Thr Pro Ala Gln Ala Ala Pro

545	550	555	560
Leu Arg Val Ser Leu Asn Asp Asn Phe Phe Asn Leu Gly Gly His Ser			
565	570	575	
Leu Leu Ala Thr Gln Leu Phe Ser Arg Ile Arg Gln Ser Phe Asp Ile			
580	585	590	
Glu Val Arg Val Asn Thr Leu Phe Glu Ser Pro Val Leu Glu Asp Phe			
595	600	605	
Ala Arg Val Val Asn Glu Ala Arg Gln Gln Ala Pro Thr Gly Gly			
610	615	620	
Asn Thr Ile Ser Ser Arg Ala Val Arg Asp Ala Pro Val Pro Leu Ser			
625	630	635	640
Tyr Gln Gln Glu Arg Leu Trp Phe Val His Glu His Met Pro Glu Gln			
645	650	655	
Arg Thr Ser Tyr Asn Val Ala Phe Ala Cys His Leu Arg Ser Ala Asp			
660	665	670	
Phe Ser Met Ser Ala Leu Arg Glu Ala Ile Gln Ala Leu Val Ala Arg			
675	680	685	
His Glu Thr Leu Arg Thr Arg Ile Ala Thr Cys Ala Gly Gly Asp Tyr			
690	695	700	
Pro Ser Gln His Ile Ala Asp Ala Met Gln Val Pro Val Pro Cys Ile			
705	710	715	720
Thr Ala Thr Pro Ala Glu Val Pro Arg Leu Val Ala Glu His Ala Ala			
725	730	735	
His Val Phe Asp Leu Ala His Gly Pro Leu Leu Lys Val Ser Val Leu			
740	745	750	
Arg Val Ser Asp Asp Tyr His Val Phe Leu Met Asn Met His His Ile			
755	760	765	
Ile Cys Asp Gly Trp Ser Ile Asn Leu Ile Phe His Asp Leu Arg Ala			
770	775	780	
Phe Tyr Ile Ala Ala Leu Gln Gln Thr Pro Pro Ala Leu Pro Pro Leu			
785	790	795	800
Leu Leu Gln Tyr Ala Asp Tyr Ala Thr Trp Gln Arg Val Gln Asp Phe			
805	810	815	
Ser Ala Asp Leu Asp Tyr Trp Lys Gln Arg Leu His Gly Tyr Glu Glu			
820	825	830	
Gly Leu Ala Leu Pro Tyr Asp Phe Pro Arg Pro Ala Asn Arg Ala Trp			
835	840	845	
Arg Ala Gly Ile Leu His Leu Thr Tyr Pro Asp Ala Leu Ala Ala Arg			
850	855	860	
Leu Ala Ala Phe Ser Gln Glu Arg Arg Val Thr Leu Phe Met Thr Leu			
865	870	875	880

Met Ala Ser Leu Ala Ile Val Leu His Gln Tyr Thr Gly Arg Arg Glu  
 885 890 895  
 Leu Cys Leu Gly Thr Thr Ser Ala Gly Arg Asp Gln Leu Glu Thr Glu  
 900 905 910  
 Asn Leu Ile Gly Phe Phe Val Asn Ile Leu Ala Val Arg Leu Asn Leu  
 915 920 925  
 Gly Ser His Ala Phe Ala Glu Asp Phe Leu Gln His Val Arg Gln Gln  
 930 935 940  
 Val Leu Asp Ala Tyr Ala His Arg Ala Leu Pro Phe Glu His Val Leu  
 945 950 955 960  
 Ser Ala Leu Lys Lys Pro Arg Asp Ser Ser Gln Ile Pro Leu Val Pro  
 965 970 975  
 Ile Met Leu Arg His Gln Asn Phe Ala Thr Glu Gly Val Asn Ala Phe  
 980 985 990  
 Ala Gln Ile Phe Leu Ser Ala Gln Met Glu Phe Gly Glu Arg Thr Thr  
 995 1000 1005  
 Pro Asn Glu Leu Asp Leu Gln Phe Ile Gly Asp Gly Ser His Leu  
 1010 1015 1020  
 Glu Val Thr Val Glu Tyr Ala Ala Glu Leu Phe Ser Ala Ala Thr  
 1025 1030 1035  
 Val Gln Arg Met Leu Ala His His Gln Arg Val Leu Glu Arg Met  
 1040 1045 1050  
 Leu Glu Glu Pro Arg Cys Arg Leu Ser Asp Phe Ser Leu Pro Val  
 1055 1060 1065  
 Ala Arg Thr Glu Phe Thr Pro His Thr Leu Asp Thr Ser Arg Ser  
 1070 1075 1080  
 Val Leu Asp Leu Phe Asp Ala Gln Val Ala Leu His Ala Glu Glu  
 1085 1090 1095  
 Leu Ala Cys Ala Asp Gln His Arg Gln Leu Ser Tyr Ala Gln Leu  
 1100 1105 1110  
 Asp Gln His Ala Asn Arg Leu Ala His Cys Leu Ile Glu Arg Gly  
 1115 1120 1125  
 Leu Arg Pro Gln Glu Arg Val Ala Leu Trp Phe Gly Arg Ser Pro  
 1130 1135 1140  
 Asp Phe Leu Ile Ala Leu Leu Gly Val Leu Lys Ala Gly Gly Cys  
 1145 1150 1155  
 Tyr Val Pro Leu Asp Pro His Tyr Pro Thr Thr Tyr Ile Gln Gln  
 1160 1165 1170  
 Ile Leu Asp Asp Ala Gln Pro Arg Leu Leu Leu Cys Gly Lys Asp  
 1175 1180 1185

Ile Asp Gly Gln Leu Ile Gln Val Pro Arg Leu Arg Leu Asp Asp  
 1190 1195 1200  
 Ala Ala Ile Ala Arg Gln Pro His Thr Pro Leu Pro His Ala Leu  
 1205 1210 1215  
 His Pro Ala Gln Leu Ala Tyr Val Met Tyr Thr Ser Gly Ser Thr  
 1220 1225 1230  
 Gly Arg Pro Lys Gly Val Met Val Pro His Arg Gln Ile Leu Asn  
 1235 1240 1245  
 Trp Leu His Ala Leu Trp Ala Arg Ala Pro Phe Glu Ala Gly Lys  
 1250 1255 1260  
 Arg Val Ala Gln Lys Thr Ser Ile Ala Phe Ala Ile Ser Val Lys  
 1265 1270 1275  
 Glu Leu Leu Ala Gly Leu Leu Ala Gly Val Pro Gln Val Phe Ile  
 1280 1285 1290  
 Asp Glu Asp Thr Val Arg Asp Ile Pro Ala Phe Val Arg Ala Leu  
 1295 1300 1305  
 Glu Thr Trp Gln Ile Thr Arg Leu Tyr Thr Phe Pro Ser Gln Leu  
 1310 1315 1320  
 Asn Ala Leu Leu Asp His Val Ala Glu Thr Pro Gln Arg Leu Ala  
 1325 1330 1335  
 Arg Leu Arg Gln Leu Phe Val Ser Ile Glu Pro Cys Pro Ala Glu  
 1340 1345 1350  
 Leu Leu Gln Arg Leu Arg Thr Leu Leu Pro Ala Cys Thr Ala Trp  
 1355 1360 1365  
 Tyr Ile Tyr Gly Cys Thr Glu Ile Asn Asp Met Thr Tyr Cys Asp  
 1370 1375 1380  
 Pro Ala Glu Gln His Ser Gly Ser Gly Phe Val Pro Val Gly Arg  
 1385 1390 1395  
 Pro Ile Ala Asn Thr Lys Val His Val Leu Asp Glu Gln Leu Arg  
 1400 1405 1410  
 Pro Leu Pro Pro Gly Ile Met Gly Glu Val His Ile Glu Ser Leu  
 1415 1420 1425  
 Gly Ile Thr His Gly Tyr Trp Arg Gln Gly Gly Leu Thr Ala Ala  
 1430 1435 1440  
 Arg Phe Ile Ala Asn Pro Tyr Gly Pro Pro Gly Ser Arg Leu Tyr  
 1445 1450 1455  
 Arg Thr Gly Asp Met Ala Arg Leu Leu Asp Asn Gly Thr Leu Glu  
 1460 1465 1470  
 Leu Leu Gly Arg Arg Asp Tyr Glu Val Lys Val Arg Gly Tyr Arg  
 1475 1480 1485  
 Val Asp Val Arg Gln Val Glu Lys Ala Leu Ala Ala His Leu Gln  
 1490 1495 1500

Val Ala Glu Ala Ala Val Ile Gly Trp Pro Gln Gly Ser Pro Thr  
 1505 1510 1515  
 Pro Glu Leu Leu Ala Tyr Val Val Pro Arg Gln Gly Val Leu Asn  
 1520 1525 1530  
 Leu Asp Glu Leu Arg Lys Leu Leu Gln Glu Arg Leu Pro Thr Tyr  
 1535 1540 1545  
 Met Leu Pro Thr Arg Phe Gln Ser Leu Pro Ala Leu Pro Arg Leu  
 1550 1555 1560  
 Pro Asn Gly Lys Leu Asp Thr Leu Ser Leu Pro Glu Pro Gln Ala  
 1565 1570 1575  
 Ala Ser Ser Asp Ser Asp Tyr Leu Ala Pro Arg Ser Glu Val Glu  
 1580 1585 1590  
 Ile Thr Leu Ala Lys Leu Trp Ser Glu Leu Leu Thr Pro Ala Gln  
 1595 1600 1605  
 Ala Ala Pro Leu Arg Val Ser Leu Asn Asp Asn Phe Phe Asn Leu  
 1610 1615 1620  
 Gly Gly His Ser Leu Leu Ala Thr Gln Leu Phe Ser Arg Ile Arg  
 1625 1630 1635  
 Gln Ser Phe Asp Ile Glu Val Arg Val Asn Thr Leu Phe Glu Ser  
 1640 1645 1650  
 Pro Val Leu Glu Asp Phe Ala Ala Val Val Glu Arg Gly Met Arg  
 1655 1660 1665  
 Gln Ser Gln Ala Gly Ser Met Pro Val Ser Leu Ile Val Pro Leu  
 1670 1675 1680  
 Ser Leu Arg Thr Glu Arg Ala Ala Val Tyr Ala Ile His Pro Ile  
 1685 1690 1695  
 Gly Gly Gln Ile His Cys Tyr Ile Asp Leu Ala Ala Ala Leu Gly  
 1700 1705 1710  
 His Ser Ala Arg Val Tyr Gly Leu Gln Cys Glu Pro Val Arg Arg  
 1715 1720 1725  
 Phe Ala His Leu Ser Asp Leu Ala Ala His Tyr Cys Asp Ala Leu  
 1730 1735 1740  
 Leu Ala Gly Pro Thr Gly Ala Pro Tyr Arg Leu Leu Gly Trp Ser  
 1745 1750 1755  
 Ser Gly Gly Val Leu Ala Leu Ala Val Ala Glu Gln Leu Gln Arg  
 1760 1765 1770  
 Arg Gly Leu Arg Val Asp Tyr Val Gly Leu Leu Asp Ser Ser Leu  
 1775 1780 1785  
 Ile Pro Val His Ala Arg Glu Pro Arg Gln Leu Thr Phe Val Ala  
 1790 1795 1800

Ala Leu Asn Thr Leu Ala Ala Leu Ala Lys Arg Gly Phe Glu Gln  
 1805 1810 1815  
 Ala Glu Ile Asp Glu Ala Arg Gln Leu Leu Phe Ala Asp Gly Asp  
 1820 1825 1830  
 Asp Glu His Val Phe Asp Tyr Ser Arg His Gln Ala Ser Leu Asp  
 1835 1840 1845  
 Lys Leu Leu Ala His Leu Arg Phe Thr Leu Glu Ser Arg Met Trp  
 1850 1855 1860  
 Pro Pro Leu Ala Glu Gln Leu Arg Val Thr Arg Tyr His Leu Gly  
 1865 1870 1875  
 Leu Leu Ala Gly Phe Glu Pro Gln Cys Leu Gln Pro Asn Ala His  
 1880 1885 1890  
 Leu Tyr Gln Ala Gln Thr Ala Val His Val Ser Tyr Ala Asp Met  
 1895 1900 1905  
 Ser Lys Pro Arg Gly Gly Ser Glu Val Leu Pro Asp Ile Thr Gly  
 1910 1915 1920  
 Tyr Val Pro Leu Ser Gln Ile Lys Ser Ala Ala Gly Asn His Tyr  
 1925 1930 1935  
 Ser Met Leu Gln Gly Asp Pro Leu Arg Glu Leu Ala Arg Met Leu  
 1940 1945 1950  
 Val Thr Asp Leu Asp Ala  
 1955

<210> 35  
 <211> 83  
 <212> PRT  
 <213> Xanthomonas albilineans

<400> 35

Met Thr Phe Glu Glu Gln Ala Tyr Leu Val Leu Ile Asn Asp Glu Leu  
 1 5 10 15

Gln Tyr Ser Leu Trp Pro Ser Asp Leu Glu Val Pro Pro Gly Trp Arg  
 20 25 30

Lys Glu Gly Tyr Ala Gly Gly Lys Asp Glu Cys Met Ala Tyr Ile Asp  
 35 40 45

Glu Thr Trp Thr Asp Met Arg Pro Leu Ser Leu Arg Glu Leu Asp Asp  
 50 55 60

Lys Asn Leu Gly Asp Ala Ser Ser Pro Asp Gly Ser Gly Phe Glu Ser  
 65 70 75 80

Ser Tyr Ser

<210> 36

<211> 315  
 <212> PRT  
 <213> Xanthomonas albilineans

<400> 36

Met Gly Cys Ala Cys Leu Pro His Tyr Leu Glu Lys Gln Asp Leu Ser  
 1 5 10 15

Ala Leu Asp Asp Ala Leu Ala Gly Val Arg Leu Ser Gln Tyr Cys Thr  
 20 25 30

Thr Asp Gly Arg Gln Leu Glu Leu Tyr Trp Leu Gly Ala Gln Ala Ser  
 35 40 45

Pro Lys Leu Val Leu Leu Pro Pro Tyr Gly Met Ser Tyr Leu Leu Leu  
 50 55 60

Ser Arg Leu Ala Gln Arg Leu Ala Arg His Phe His Val Leu Cys Trp  
 65 70 75 80

Glu Ser Ile Gly Cys Pro Asn Ala Gln Thr Ser Val Thr Ala Glu Asp  
 85 90 95

Phe Asp Leu Asp Arg Gln Ala Ala Thr Leu Leu Gly Ile Leu His Gln  
 100 105 110

His Asp Tyr Ala Asp Cys His Phe Val Gly Trp Cys Gln Ala Ala Gln  
 115 120 125

Leu Ala Val His Ala Ile Ala Leu His Gly Phe Ala Pro Arg Ser Met  
 130 135 140

Ala Trp Val Ala Pro Ala Gly Leu Leu Pro Pro Ile Val Lys Ser Glu  
 145 150 155 160

Phe Glu Arg Cys Ala Leu Pro Ile Tyr Leu Gln Ile Glu Arg His Gly  
 165 170 175

Leu Glu Gln Ala Lys Lys Leu Ala Ala Ile Leu Asp Lys Tyr Arg Gly  
 180 185 190

Gln Pro Leu Arg Gly Asp Asp Leu Ala Glu Lys Leu Thr Met Leu His  
 195 200 205

Leu Ala Asp Pro Ala Ser Thr Leu Val Phe Ser Arg Tyr Met Arg Ala  
 210 215 220

Tyr Glu Glu Asn Lys Gln Ser Val Gln Ala Leu Leu Pro Thr Ala Leu  
 225 230 235 240

Gly Arg His Pro Thr Leu Ile Val His Cys Lys Asp Asp Ser Phe Ser  
 245 250 255

His Tyr Ser Ala Ser Val Gln Leu Ala Arg His Asp Pro Ser Leu Arg  
 260 265 270

Leu Asp Leu Leu Asp His Gly Gly His Leu Gln Leu Phe Asn Asp Pro  
 275 280 285

Gly Ala Val Ala Gln Arg Ile Ile Asp Phe Ile Gly Leu Thr Val Gly

290

295

300

Glu Val Ala Pro Thr Ser Met His Ser Ala Ala  
 305 310 315

<210> 37  
 <211> 451  
 <212> PRT  
 <213> Xanthomonas albilineans

<400> 37

Met Tyr Ile Pro Asn Asn Ile Asp Leu Asp Pro His Ser Ala Leu Val  
 1 5 10 15

Arg Gln Leu Thr Ser Tyr Gln Val Arg Phe Leu Gln Trp Trp Arg Leu  
 20 25 30

Arg Gly Pro Ser Glu Phe His Asp Arg Glu Met Asn Leu Arg Met Pro  
 35 40 45

Thr Gly Gly Val Lys Gly Ser Glu Trp Thr Arg Tyr His Arg Met Arg  
 50 55 60

Pro Ser Asp Tyr Arg Trp Gly Val Phe Met Met Pro Pro Asp Arg Asn  
 65 70 75 80

Thr Val Val Phe Gly Glu Arg Lys Gly Gln Val Ala Trp Ser Cys Val  
 85 90 95

Pro Glu Glu Tyr Arg Asp Leu Leu Leu Asp His Val Thr Val Gln Gly  
 100 105 110

Asp Val Glu Asn Ala Ala Val Glu Gln Ser His Glu Leu Thr Gln Met  
 115 120 125

Val Pro Ser Ala Ile Asp Leu Glu His Leu Phe Gln Phe Phe Leu Glu  
 130 135 140

Glu Gly Arg His Thr Trp Ala Met Ser His Leu Leu Ile Glu Tyr Phe  
 145 150 155 160

Gly Ser Asp Gly Ala Asp Ala Ala Glu Gly Leu Leu Gln Arg Met Ser  
 165 170 175

Gly Asp Ala Gln Asn Pro Arg Leu Leu Asp Ala Phe Asn Tyr His Thr  
 180 185 190

Glu Asp Trp Leu Ser His Phe Met Trp Cys Phe Phe Ala Asp Arg Val  
 195 200 205

Gly Lys Tyr Gln Ile Gln Ala Val Thr Gln Ser Ala Phe Leu Pro Leu  
 210 215 220

Ala Arg Thr Ala Arg Phe Met Met Phe Glu Glu Pro Leu His Ile Lys  
 225 230 235 240

Phe Gly Val Asp Gly Leu Glu Arg Val Leu Tyr Arg Ser Ala Glu Ile  
 245 250 255

Thr Leu Arg Glu Asp Thr His Ala Ile Phe Asp Ala Gly Ala Ile Pro  
 260 265 270  
 Leu Pro Val Val Gln Lys Tyr Leu Asn Tyr Trp Leu Pro Lys Ile Phe  
 275 280 285  
 Asp Leu Phe Gly His Asp Val Ser Glu Arg Ser Arg Val Leu Tyr Gln  
 290 295 300  
 Ala Gly Ile Arg Ser Pro Arg Asn Phe Asp Lys Leu Glu Gly Thr Glu  
 305 310 315 320  
 Val Ala Val Asp Val Arg Cys Glu Asp Arg Leu Val Ser Ser Thr Ala  
 325 330 335  
 Pro Ala Glu Leu Ala Ile Asn Ala Val Met Arg Arg Gln Tyr Ile Ala  
 340 345 350  
 Glu Val Gly Ala Ile Ile Gly Arg Trp Asn Gln Gln Leu Arg Arg Leu  
 355 360 365  
 Gly Leu Ala Phe Glu Leu Gln Leu Pro His Glu Arg Phe His Arg Asp  
 370 375 380  
 Phe Gly Pro Cys Lys Gly Leu Ala Phe Asp Leu Asp Gly Asn Pro Val  
 385 390 395 400  
 His Asp Ala Asp Gly Gln Arg Leu Ala Ala Leu Leu Pro Thr Pro Gln  
 405 410 415  
 Asp Leu Ala Gly Val Arg Gly Leu Met Gly Arg Glu Leu Gly Glu Gly  
 420 425 430  
 Arg Thr Ala Val Trp Leu Ala Pro Ala Gly Ala Ser Leu Asp Lys Leu  
 435 440 445  
 Met Pro Ala  
 450

<210> 38  
 <211> 317  
 <212> PRT  
 <213> Xanthomonas albilineans

<400> 38

Met Asn Ser Tyr Val Gly Cys Gln Lys Leu Glu Thr Asp Gly Asp Ala  
 1 5 10 15  
 Ser Arg Val Val Pro Met Trp Val Met Tyr Pro Thr Ala Thr Pro Ser  
 20 25 30  
 Arg Asp Thr Ala Met Gly Pro Tyr Thr Leu Asp Val Ala Leu Gly Ala  
 35 40 45  
 Pro Ile Glu Ala Gly Pro Phe Pro Leu Ala Val Ile Ser His Gly Thr  
 50 55 60  
 Arg Ser Ala Gly Leu Val Phe Arg Thr Leu Ala His Tyr Leu Ala Arg  
 65 70 75 80

His Gly Phe Ile Val Ala Leu Pro Glu His Pro Gly Asp Asn Leu Phe  
 85 90 95

Gln His Gln Leu Glu Tyr Ser Tyr Gln Asn Leu Glu Asp Arg Pro Arg  
 100 105 110

His Ile Arg Ala Val Ile Asp Thr Leu Thr Gly His Ala Gln Phe Gly  
 115 120 125

Pro Ala Ile Gln Ala His Asn Val Ala Val Ile Gly His Ser Val Gly  
 130 135 140

Gly Tyr Thr Ala Leu Ala Ile Ala Gly Gly Glu Pro His Thr Gly Phe  
 145 150 155 160

Met Val Asp Phe Ala His Arg Pro Glu His Ala Glu Gln Pro Ala Trp  
 165 170 175

Thr Ala Leu Val Arg Gln Asn Arg Val Pro Ile Arg Ala Val Pro Val  
 180 185 190

Thr Ala Asp Pro Arg Val Arg Ala Val Val Ala Leu Ala Pro Asp Phe  
 195 200 205

Ser Leu Tyr Met His Glu Asp Ala Leu Ala Lys Val Glu Val Pro Val  
 210 215 220

Leu Leu Ile Val Gly Glu Lys Asp Gln Trp Ala His Glu Thr Ile Val  
 225 230 235 240

Ala Thr Arg Thr Ala Leu Gly Asn Asp Gly Arg Leu Glu Ala Arg Val  
 245 250 255

Val Pro Asn Ala Gly His Tyr Ala Phe Ile Ser Val Phe Pro Glu Ala  
 260 265 270

Met Lys Ala Arg Val Gly Glu Ala Ala Ile Asp Pro Pro Gly Phe Asp  
 275 280 285

Arg Ser Ala Phe Gln Arg Glu Leu Glu Arg Asp Ile Leu His Phe Leu  
 290 295 300

Thr Val Thr Met Arg Pro Ala Glu Ala Ala Ile Ser Gly  
 305 310 315

<210> 39  
 <211> 496  
 <212> PRT  
 <213> Xanthomonas albilineans

<400> 39

Met Gln Lys Pro Lys Glu Ala Leu Gly Met Pro Pro Gly Met Ala Pro  
 1 5 10 15

Pro Gly Ala Gln Phe Asp Tyr Arg Trp Arg Trp Pro Ala Met Ile Val  
 20 25 30

Leu Leu Ser Ala Asn Phe Met Asn Leu Leu Asp Val Gly Ile Val Asn  
 35 40 45

Val Ala Leu Pro Ser Ile Gln Lys Asn Leu Gly Ala Asp Glu Gln Gln  
 50 55 60

Leu Glu Trp Ile Val Ala Ile Tyr Ile Leu Leu Phe Ala Leu Gly Leu  
 65 70 75 80

Leu Pro Leu Gly Arg Leu Gly Asp Met Leu Gly Arg Lys Arg Met Phe  
 85 90 95

Gly Thr Gly Val Ala Gly Phe Ile Leu Met Ser Ala Phe Cys Ala Ile  
 100 105 110

Ala Gly Asn Ile His Val Leu Ile Ile Ala Arg Ala Leu Gln Gly Leu  
 115 120 125

Ala Ala Ala Met Leu Ala Pro Gln Val Met Ala Ile Ala Gln Thr Met  
 130 135 140

Phe Ala Pro Lys Glu Arg Ala Ala Ala Phe Ser Leu Phe Gly Leu Val  
 145 150 155 160

Ala Gly Leu Ala Ser Phe Ala Gly Pro Leu Val Ser Gly Leu Leu Ile  
 165 170 175

His Ile Asp Ala Phe Gly Val Gly Trp Arg Ala Ile Phe Leu Ile Asn  
 180 185 190

Val Pro Ile Gly Leu Val Thr Leu Leu Ala Ala Ala Ile Trp Val Pro  
 195 200 205

Lys Val Pro Ala His Ala Gly Ile His Asn Asp Trp Val Gly Ile Ala  
 210 215 220

Leu Ala Ala Leu Ala Leu Leu Cys Leu Val Phe Pro Leu Ile Glu Gly  
 225 230 235 240

Arg Ala Tyr Gly Trp Pro Leu Trp Cys Phe Ala Ala Ile Ala Leu Gly  
 245 250 255

Ile Pro Leu Leu Val Ala Phe Val Ala Trp Gln Arg Arg Gln Ala His  
 260 265 270

Leu Ala Arg Pro Ala Leu Leu Pro Ile Tyr Leu Met Ser His Arg Asp  
 275 280 285

Tyr Ile Leu Gly Ala Leu Ser Val Ser Val Phe Tyr Ser Ala Leu Gln  
 290 295 300

Gly Phe Phe Leu Val Phe Val Ile Phe Leu Gln Gln Gly Leu Ala Tyr  
 305 310 315 320

Ser Ala Leu Glu Thr Gly Val Ala Thr Thr Pro Phe Pro Val Gly Val  
 325 330 335

Ala Ile Ala Ser Met Leu Ala Arg His Val Glu Ser Leu Arg Ala Lys  
 340 345 350

Ile Phe Ser Gly Ala Cys Leu Met Ile Ala Ser Tyr Leu Ala Leu Trp  
 355 360 365

Val Ile Ile Thr Arg Ser Glu Gly Ser Leu Asp Pro Trp Thr Leu Thr  
 370 375 380  
 Leu Pro Leu Leu Ile Gly Gly Leu Gly Cys Gly Ile Thr Ile Ala Ser  
 385 390 395 400  
 Leu Phe Gln Thr Val Met Arg Thr Val Pro Leu Lys Asp Ala Gly Ala  
 405 410 415  
 Gly Ser Gly Ala Leu Gln Val Ile Gln Gln Val Gly Gly Met Leu Gly  
 420 425 430  
 Ile Ala Leu Val Ser Glu Ile Phe Phe Ser Gly Leu His Gln His Leu  
 435 440 445  
 Gln Gly Pro Ala Gly Val Ala Leu Ala Phe Lys Gln Ala Phe Gly Ala  
 450 455 460  
 Thr Val Val Tyr Tyr Ile Ala Ala Asn Ala Phe Val Ala Leu Ser Thr  
 465 470 475 480  
 Leu Gly Leu Gln Phe Lys Leu Thr Gln Phe Ala Pro Gln Ser Ser Pro  
 485 490 495

<210> 40  
 <211> 584  
 <212> PRT  
 <213> Xanthomonas albilineans  
 <400> 40

Met Lys Arg Thr Tyr Ile Gly Leu Ala Asn Ser Phe His Asp Ser Ala  
 1 5 10 15  
 Ile Ala Ile Val Gly Asp Asp Gly Gln Val Arg Phe Ala Glu Ala Thr  
 20 25 30  
 Glu Arg Tyr Leu Gln Tyr Lys Arg Ser Ile Gly Val Ala Pro Asp Val  
 35 40 45  
 Phe Gln Arg Ala Ile Lys Leu Val His Glu Tyr Gly Asp Pro Gly Ala  
 50 55 60  
 Glu Leu Val Val Ala Thr Ser Trp Ser Gly Gln Thr Pro Glu Leu Met  
 65 70 75 80  
 Arg Glu Gly Leu Gly Lys Thr Ala Gln Ala Val Asp Gln Tyr Arg Ser  
 85 90 95  
 Ala Phe Gly Asp Leu Pro Trp His Val Asn Lys Gln Phe Val Ala Gln  
 100 105 110  
 Ser Phe Phe Tyr Arg Ser Gln Leu Ala Met Val Glu His Pro Gly His  
 115 120 125  
 Leu Leu Glu Tyr Asp Leu Ser His Met Ala Glu Pro Ala Phe Lys Pro  
 130 135 140  
 Pro Ser Tyr Arg His Tyr Glu His His Leu Thr His Ala Val Ala Gly  
 145 150 155 160

Cys Tyr Thr Ser Pro Phe Glu Glu Ala Val Cys Ala Val Leu Asp Gly  
                  165                         170                         175  
  
 Met Gly Glu Lys Asn Ala Leu Ala Cys Tyr His Tyr Gln Gln Gly Lys  
                  180                         185                         190  
  
 Leu Thr Pro Ile His Gln Ser Glu Thr Ser Ser Trp Ala Ser Leu Gly  
                  195                         200                         205  
  
 Phe Phe Tyr Gly Met Ile Cys Glu Val Cys Gly Phe Gly Thr Leu Ser  
                  210                         215                         220  
  
 Gly Glu Glu Trp Lys Val Met Gly Leu Ala Ala Tyr Gly Gln His Asp  
                  225                         230                         235                         240  
  
 Arg Gln Leu Tyr Glu Leu Leu Arg Gln Met Leu Arg Val Asp Gly Leu  
                  245                         250                         255  
  
 Thr Leu Arg Phe Ala Pro Ala Ala Gln Phe Ser Gln Leu Gln Arg Thr  
                  260                         265                         270  
  
 Leu Tyr Ala Met Arg Arg Cys Lys Gly Gln Pro Thr Ile Glu Leu Ala  
                  275                         280                         285  
  
 Asn Leu Ala Tyr Ala Gly Gln Gln Val Phe Cys Asp Val Leu Phe Glu  
                  290                         295                         300  
  
 Phe Leu His Asn Leu His Ala Leu Gly Leu Ser Asp His Leu Val Leu  
                  305                         310                         315                         320  
  
 Gly Gly Gly Cys Ala Leu Asn Ser Ser Ala Asn Gly Arg Val Leu Ala  
                  325                         330                         335  
  
 Glu Thr Pro Phe Arg His Leu His Val Phe Ala Ala Pro Gly Asp Asp  
                  340                         345                         350  
  
 Gly Asn Ala Val Gly Ala Ala Leu Trp Ala His Ala Glu Asp His Pro  
                  355                         360                         365  
  
 Glu Gln Thr Pro Pro Ala Ala Arg Glu Gln Ser Pro Tyr Leu Gly Ser  
                  370                         375                         380  
  
 Ser Met Ser Ala Glu Thr Leu His Asn Val Glu Arg Phe Gly Ala Leu  
                  385                         390                         395                         400  
  
 Ser Lys Phe Thr Arg Cys Leu Asp Asp Ala Ala Gln Arg Ala Ala Arg  
                  405                         410                         415  
  
 Leu Leu Thr Glu Gly Lys Ile Val Ala Trp Val Gln Gly Arg Ala Glu  
                  420                         425                         430  
  
 Phe Gly Pro Arg Ala Leu Gly Asn Arg Ser Ile Leu Ala Asp Pro Arg  
                  435                         440                         445  
  
 Ser Pro Ala Ile Lys Asp Ile Ile Asn Ala Arg Val Lys Phe Arg Glu  
                  450                         455                         460  
  
 Glu Phe Arg Pro Phe Ala Pro Ser Ile Leu His Glu His Gly Ala Glu  
                  465                         470                         475                         480

Tyr Phe Glu Leu Tyr Gln Glu Ser Pro Tyr Met Glu Arg Thr Leu Lys  
 485 490 495

Phe Arg Ala Glu Ala Thr Arg Lys Val Pro Gly Val Val His His Asp  
 500 505 510

Gly Thr Gly Arg Leu Gln Thr Val Lys Gln His Trp Asn Pro Arg Tyr  
 515 520 525

His Ala Leu Ile Lys Glu Phe Tyr Arg Leu Thr Gly Ile Pro Leu Val  
 530 535 540

Leu Asn Thr Ser Phe Asn Val Met Gly Lys Pro Ile Ala His Ser Val  
 545 550 555 560

Glu Asp Ala Leu Ser Ile Phe Phe Thr Ser Gly Leu Asp Ala Met Phe  
 565 570 575

Ile Asp Asp Val Leu Ile Glu Lys  
 580

<210> 41

<211> 88

<212> PRT

<213> Xanthomonas albilineans

<400> 41

Met Arg Thr Ser Lys Phe Asn Glu Thr Gln Ile Ile Ala Thr Leu Lys  
 1 5 10 15

Gln Ala Asp Ala Gly Val Pro Val Lys Asp Ile Cys Arg Gln Val Gly  
 20 25 30

Ile Ser Thr Ala Thr Tyr Tyr Gln Trp Lys Ser Lys Tyr Val Ala Ser  
 35 40 45

Glu Met Pro Ser Ser Arg His Thr Ser Leu Thr Trp Arg Pro Pro Ser  
 50 55 60

Thr Cys Phe Ser Val Ala Thr Ile Trp Leu Ser Val Asn Leu Leu Leu  
 65 70 75 80

Arg Ile Val Gly Arg Leu Gly Gly  
 85

<210> 42

<211> 716

<212> PRT

<213> Xanthomonas albilineans

<400> 42

Met Arg Cys Leu Ile Ile Asn Asn Tyr Asp Ser Phe Thr Trp Asn Leu  
 1 5 10 15

Ala Asp Tyr Val Ala Gln Ile Phe Gly Glu Asp Pro Leu Val Val His  
 20 25 30

Asn Asp Glu Tyr Ser Trp His Glu Leu Lys Asp Arg Gly Gly Phe Ser  
 35 40 45

Ser Ile Ile Val Ser Pro Gly Pro Gly Ser Val Val Asn Glu Ala Asp  
 50 55 60

Phe His Ile Ser Leu Gln Ala Leu Glu Gln Asn Glu Phe Pro Val Leu  
 65 70 75 80

Gly Val Cys Leu Gly Phe Gln Gly Leu Ala His Val Tyr Gly Gly Arg  
 85 90 95

Ile Leu His Ala Pro Val Pro Phe His Gly Arg Arg Ser Thr Val Ile  
 100 105 110

Asn Thr Gly Asp Gly Leu Phe Glu Gly Ile Pro Gln Arg Phe Glu Ala  
 115 120 125

Val Arg Tyr His Ser Leu Met Val Cys Gln Gln Ser Leu Pro Pro Val  
 130 135 140

Leu Lys Val Thr Ala Arg Thr Asp Cys Gly Val Val Met Gly Leu Gln  
 145 150 155 160

His Val Gln His Pro Lys Trp Gly Val Gln Phe His Pro Glu Ser Ile  
 165 170 175

Leu Thr Glu His Gly Lys Arg Ile Val Ala Asn Phe Ala Lys Leu Ala  
 180 185 190

Ala Arg His Ser Ala Pro Leu Leu Ala Gly Ser Glu Gln Ala Gly Lys  
 195 200 205

Val Leu Ser Val Cys Ala Pro Glu Met Val Thr Pro Arg Val Arg Arg  
 210 215 220

Met Leu Ser Arg Lys Ile Lys Cys Arg Trp Gln Ala Glu Asp Val Phe  
 225 230 235 240

Leu Ala Leu Phe Ala Asp Glu Lys His Cys Phe Trp Leu Asp Ser Gln  
 245 250 255

Leu Val Cys Ser Pro Met Ala Arg Tyr Ser Phe Met Gly Ala Val Asn  
 260 265 270

Glu Ser Glu Val Val Arg His Cys Val Arg Pro Gly Ser Met Val Gln  
 275 280 285

Glu Ala Gly Glu Arg Phe Leu Ala Glu Met Asp Arg Ala Leu Gln Ser  
 290 295 300

Val Leu Thr Glu Asp Val Ala Glu Arg Pro Pro Phe Ala Phe Arg Gly  
 305 310 315 320

Gly Tyr Val Gly Tyr Met Ser Tyr Glu Met Lys Ser Val Phe Gly Ala  
 325 330 335

Pro Ala Ser His Ala Asn Ala Ile Pro Asp Ala Leu Trp Met Arg Val  
 340 345 350

Glu Arg Phe Val Ala Phe Asp His Ala Thr Glu Glu Val Trp Leu Leu

355

360

365

Ala Leu Ala Asp Thr Glu Asp Leu Ser Ala Leu Ala Trp Leu Asp Ala  
 370 375 380

Ile Glu Gln Arg Ile His Ala Ile Gly Gln Ala Ala Pro Ala Cys Ile  
 385 390 395 400

Ser Leu Gly Leu Arg Ser Met Glu Ile Glu Leu Asn His Gly Arg Arg  
 405 410 415

Gly Tyr Leu Glu Ala Ile Glu Arg Cys Lys Gln Arg Ile Val Asp Gly  
 420 425 430

Glu Ser Tyr Glu Ile Cys Leu Thr Asp Leu Phe Ser Phe Gln Ala Glu  
 435 440 445

Leu Asp Pro Leu Met Leu Tyr Arg Tyr Met Arg Arg Gly Asn Pro Ala  
 450 455 460

Pro Phe Gly Ala Tyr Leu Arg Asn Gly Ser Asp Cys Ile Leu Ser Thr  
 465 470 475 480

Ser Pro Glu Arg Phe Leu Glu Val Asp Gly His Gly Thr Ile Gln Thr  
 485 490 495

Lys Pro Ile Lys Gly Thr Cys Arg Arg Ala Glu Asp Pro Gln Leu Asp  
 500 505 510

Arg Asn Leu Ala Met Arg Leu Ala Ala Ser Glu Lys Asp Arg Ala Glu  
 515 520 525

Asn Leu Met Ile Val Asp Leu Met Arg Asn Asp Leu Ser Arg Val Ala  
 530 535 540

Val Pro Gly Ser Val Thr Val Pro Lys Leu Met Asp Ile Glu Ser Tyr  
 545 550 555 560

Lys Thr Val His Gln Met Val Ser Thr Val Glu Ala Arg Leu Arg Ala  
 565 570 575

Asp Cys Ser Leu Val Asp Leu Leu Lys Ala Val Phe Pro Gly Gly Ser  
 580 585 590

Ile Thr Gly Ala Pro Lys Leu Arg Ser Met Glu Ile Ile Asp Gly Leu  
 595 600 605

Glu Asn Ala Pro Arg Gly Val Tyr Cys Gly Ser Ile Gly Tyr Leu Gly  
 610 615 620

Tyr Asn Cys Val Ala Asp Leu Asn Ile Ala Ile Arg Ser Leu Ser Tyr  
 625 630 635 640

Asp Gly Gln Glu Ile Arg Phe Gly Ala Gly Gly Ala Ile Thr Phe Leu  
 645 650 655

Ser Asp Pro Gln Asp Glu Phe Asp Glu Val Leu Leu Lys Ala Glu Ala  
 660 665 670

Ile Leu Lys Pro Ile Trp His Tyr Leu His Ala Pro Asn Thr Pro Leu  
 675 680 685

His Tyr Glu Leu Arg Glu Asp Lys Leu Leu Leu Ala Glu His Cys Val  
 690 695 700

Ser Glu Met Pro Ala Arg Gln Ala Phe Ile Glu Pro  
 705 710 715

<210> 43  
 <211> 137  
 <212> PRT  
 <213> Xanthomonas albilineans

<400> 43

Met Arg Pro Pro Arg Leu Arg Ala Asn Gln Asp Gly Leu Leu Met Asp  
 1 5 10 15

Thr Ala Gly Arg Val Val Glu Gly Cys Thr Ser Asn Leu Phe Leu Val  
 20 25 30

Glu Asn Gly His Leu Val Thr Pro Asp Leu Gly Val Ala Gly Val Ser  
 35 40 45

Gly Ile Met Arg Gly Arg Val Ile Glu Tyr Gly Arg Gln His Gly Leu  
 50 55 60  
 Ala Cys Ala Val Lys His Val Tyr Pro Asp Gln Leu Val Arg Ala Gln  
 65 70 75 80

Glu Val Phe Leu Thr Asn Ala Val Phe Gly Ile Leu Leu Val Arg Ser  
 85 90 95

Ile Asp Ala His Ser Tyr Arg Ile Asp Pro Val Thr Leu Arg Leu Leu  
 100 105 110

Asp Ala Leu Cys Gln Gly Val Tyr Phe Thr Glu Arg Ser Leu His Gln  
 115 120 125

Val Ser Thr His Ala Gly Gln Asp Pro  
 130 135

<210> 44  
 <211> 200  
 <212> PRT  
 <213> Xanthomonas albilineans

<400> 44

Met Pro Ala Lys Thr Leu Glu Ser Lys Asp Tyr Cys Gly Glu Ser Phe  
 1 5 10 15

Val Ser Glu Asp Arg Ser Gly Gln Ser Leu Glu Ser Ile Arg Phe Glu  
 20 25 30

Asp Cys Thr Phe Arg Gln Cys Asn Phe Thr Glu Ala Glu Leu Asn Arg  
 35 40 45

Cys Lys Phe Arg Glu Cys Glu Phe Val Asp Cys Asn Leu Ser Leu Ile  
 50 55 60

Ser Ile Pro Gln Thr Ser Phe Met Glu Val Arg Phe Val Asp Cys Lys

65	70	75	80
Met Leu Gly Val Asn Trp Thr Ser Ala Gln Trp Pro Ser Val Lys Met			
85	90	95	
Glu Gly Ala Leu Ser Phe Glu Arg Cys Ile Leu Asn Asp Ser Leu Phe			
100	105	110	
Tyr Gly Leu Tyr Leu Ala Gly Val Lys Met Val Glu Cys Arg Ile His			
115	120	125	
Asp Ala Asn Phe Thr Glu Ala Asp Cys Glu Asp Ala Asp Phe Thr Gln			
130	135	140	
Ser Asp Leu Lys Gly Ser Thr Phe His Asn Thr Lys Leu Thr Gly Ala			
145	150	155	160
Ser Phe Ile Asp Ala Val Asn Tyr His Ile Asp Ile Phe His Asn Asp			
165	170	175	
Ile Lys Arg Ala Arg Phe Ser Leu Pro Glu Ala Ala Ser Leu Leu Asn			
180	185	190	
Ser Leu Asp Ile Glu Leu Ser Asp			
195	200		

<210> 45  
 <211> 202  
 <212> PRT  
 <213> Xanthomonas albilineans

<400> 45

Met His Pro Pro Ser Pro Leu Asn Thr Gln Gln Lys Asp Trp Leu Thr			
1	5	10	15
Arg Gly Gly Ser Leu Thr Ala His Leu Arg Leu Leu Gly Gln Val Gln			
20	25	30	
Val Gln Val Gln Arg Glu His Lys Ser Met Ala Trp Leu Asp Glu Tyr			
35	40	45	
Arg Val Leu Gly Leu Ser Arg Cys Leu Leu Val Trp Val Arg Glu Val			
50	55	60	
Val Leu Val Val Asp Ala Lys Pro Tyr Val Tyr Ala Arg Ser Leu Thr			
65	70	75	80
Pro Leu Thr Ala Ser Tyr Asn Ala Trp Gln Ala Val Arg Ser Ile Gly			
85	90	95	
Ser Arg Pro Leu Ala Asp Leu Leu Phe Arg Asp Arg Ser Val Leu Arg			
100	105	110	
Ser Ala Leu Ala Ser Arg Arg Ile Thr Ala Gln His Pro Leu His Arg			
115	120	125	
Arg Ala Cys Asn Phe Val Ala Gln Ser His Ala Thr Gln Ala Leu Leu			
130	135	140	

Ala Arg Arg Ser Val Phe Thr Arg Gln Gly Ala Pro Leu Leu Ile Thr  
 145 150 155 160  
 Glu Cys Met Leu Pro Ala Leu Trp Ala Thr Leu Glu Pro Val Ala Ala  
 165 170 175  
 Pro Arg Gln Ala Ser Leu Ser Ala Asp Gly Pro Cys Arg His Ser Ala  
 180 185 190  
 Gln Ile Val Ser Pro Glu Ser Met Leu Glu  
 195 200

<210> 46  
 <211> 278  
 <212> PRT  
 <213> Xanthomonas albilineans  
 <400> 46

Met Pro Asn Ala Val Pro Met Gln Gly Ala Arg Gly Leu Pro Gln Pro  
 1 5 10 15  
 Gln Ala Met Asn Pro Gly Leu Pro Ser Val Gly Gly Leu Ser Ala Gly  
 20 25 30  
 Gln Pro Leu Gln Leu Ser Leu Ala Pro Glu Leu Gln Ala Ala Ala Arg  
 35 40 45  
 Ser Ala His Arg His Leu Leu Asp Asp Gly Thr Ala Leu Tyr Leu Leu  
 50 55 60  
 Ala Phe Asp Thr Ala Gln Phe Asp Pro Gly Ala Phe Ala Ala Met Ala  
 65 70 75 80  
 Ile Ala Arg Pro Asp Ser Ile Ala Arg Ser Val Arg Lys Arg Gln Ala  
 85 90 95  
 Glu Phe Leu Phe Gly Arg Leu Ala Ala Arg Leu Ala Leu Gln Glu Val  
 100 105 110  
 Leu Gly Pro Ala Gln Ala Gln Ala Asp Ile Ala Ile Gly Ala Thr Arg  
 115 120 125  
 Ala Pro Cys Trp Pro Ala Gly Ser Leu Gly Ser Ile Ser His Cys Glu  
 130 135 140  
 Asp Tyr Ala Ala Ala Ile Ala Met Ala Ala Gly Thr Arg His Gly Val  
 145 150 155 160  
 Gly Ile Asp Leu Glu Arg Pro Ile Thr Pro Ala Ala Arg Ala Ala Leu  
 165 170 175  
 Leu Ser Ile Ala Ile Asp Ala Asp Glu Ala Ala Arg Leu Ala Lys Ala  
 180 185 190  
 Ala Asp Ala Gln Trp Pro Gln Asp Leu Leu Leu Thr Ala Leu Phe Ser  
 195 200 205  
 Ala Lys Glu Ser Leu Phe Lys Ala Ala Tyr Ser Ala Val Gly Arg Tyr  
 210 215 220

Phe Asp Phe Ser Ala Ala Arg Leu Cys Gly Ile Asp Leu Ala Arg Gln  
 225 230 235 240  
 Cys Leu His Leu Arg Leu Thr Glu Thr Leu Cys Ala Gln Phe Val Ala  
 245 250 255  
 Gly Gln Val Cys Glu Val Gly Phe Ala Arg Leu Pro Pro Asp Leu Val  
 260 265 270  
 Leu Thr His Tyr Ala Trp  
 275

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 <212> PRT  
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 <400> 47

Met Ser Val Glu Thr Gln Lys Glu Thr Leu Gly Phe Gln Thr Glu Val  
 1 5 10 15  
 Lys Gln Leu Leu Gln Leu Met Ile His Ser Leu Tyr Ser Asn Lys Glu  
 20 25 30  
 Ile Phe Leu Arg Glu Leu Ile Ser Asn Ala Ser Asp Ala Ala Asp Lys  
 35 40 45  
 Leu Arg Phe Glu Ala Leu Val Lys Pro Glu Leu Leu Asp Gly Asp Ala  
 50 55 60  
 Gln Leu Arg Ile Arg Ile Gly Phe Asp Lys Asp Ala Gly Thr Val Thr  
 65 70 75 80  
 Ile Asp Asp Asn Gly Ile Gly Met Ser Arg Glu Glu Ile Val Ala His  
 85 90 95  
 Leu Gly Thr Ile Ala Lys Ser Gly Thr Ser Asp Phe Leu Lys His Leu  
 100 105 110  
 Ser Gly Asp Gln Lys Lys Asp Ser His Leu Ile Gly Gln Phe Gly Val  
 115 120 125  
 Gly Phe Tyr Ser Ala Phe Ile Val Ala Asp Gln Val Asp Val Tyr Ser  
 130 135 140  
 Arg Arg Ala Gly Leu Pro Ala Ser Asp Gly Val His Trp Ser Ser Arg  
 145 150 155 160  
 Gly Glu Gly Glu Phe Glu Val Ala Thr Ile Asp Lys Pro Glu Arg Gly  
 165 170 175  
 Thr Arg Ile Val Leu His Leu Lys Glu Glu Glu Lys Gly Phe Ala Asp  
 180 185 190  
 Gly Trp Lys Leu Arg Ser Ile Val Arg Lys Tyr Ser Asp His Ile Ala  
 195 200 205  
 Leu Pro Ile Glu Leu Ile Lys Glu His Tyr Gly Glu Asp Lys Asp Lys

210	215	220	
Pro Glu Thr Pro Glu Trp	Glu Thr Val Asn Arg	Ala Ser Ala Leu Trp	
225	230	235	240
Thr Arg Pro Arg Thr Glu Ile Lys Asp	Glu Glu Tyr Gln Glu	Leu Tyr	
245	250	255	
Lys His Ile Ala His Asp His Glu Asn Pro	Val Ala Trp Ser His Asn		
260	265	270	
Lys Val Glu Gly Lys Leu Glu Tyr Thr Ser	Leu Leu Tyr Leu Pro Gly		
275	280	285	
Arg Ala Pro Phe Asp Leu Tyr Gln Arg Asp	Ala Ser Arg Gly Leu Lys		
290	295	300	
Leu Tyr Val Gln Arg Val Phe Ile Met Asp	Gln Ala Asp Gln Phe Leu		
305	310	315	320
Pro Leu Tyr Leu Arg Phe Ile Lys Gly Ile	Val Asp Ser Ser Asp Leu		
325	330	335	
Pro Leu Asn Val Ser Arg Glu Ile Leu Gln	Ser Gly Pro Val Ile Asp		
340	345	350	
Ser Met Lys Ser Ala Leu Thr Lys Arg Ala	Leu Asp Met Leu Glu Lys		
355	360	365	
Leu Ala Lys Asp Asp Pro Glu Arg Tyr Lys	Gly Val Trp Lys Asn Phe		
370	375	380	
Gly Gln Val Leu Lys Glu Gly Pro Ala Gln	Asp Phe Gly Asn Arg Glu		
385	390	395	400
Lys Ile Ala Gly Leu Leu Arg Phe Ala Ser	Thr His Ser Gly Asp Asp		
405	410	415	
Ala Gln Asn Val Ser Leu Ala Asp Tyr	Val Ala Arg Met Lys Asp Gly		
420	425	430	
Gln Asp Lys Leu Tyr Tyr Leu Thr Gly	Glu Ser Tyr Ala Gln Ile Lys		
435	440	445	
Asp Ser Pro His Leu Glu Val Phe Arg	Lys Gly Ile Glu Val Leu		
450	455	460	
Leu Leu Thr Asp Arg Ile Asp Glu Trp	Leu Met Ser Tyr Leu Thr Glu		
465	470	475	480
Phe Asp Ser Lys Ser Phe Val Asp Val	Ala Arg Gly Asp Leu Asp Leu		
485	490	495	
Gly Lys Leu Asp Ser Glu Glu Lys Gln	Ala Gln Glu Ala Ala		
500	505	510	
Lys Ala Lys Gln Gly Leu Ala Glu Arg	Ile Gln Gln Val Leu Lys Asp		
515	520	525	
Glu Val Ala Glu Val Arg Val Ser His	Arg Leu Thr Asp Ser Pro Ala		
530	535	540	

Ile Leu Ala Ile Gly Gln Gly Asp Met Gly Leu Gln Met Arg Gln Ile  
 545 550 555 560

Leu Glu Ala Ser Gly Gln Lys Leu Pro Glu Ser Lys Pro Val Phe Glu  
 565 570 575

Phe Asn Pro Ala His Pro Leu Ile Glu Lys Leu Asp Ala Glu Pro Asp  
 580 585 590

Val Asp Arg Phe Gly Asp Leu Ala Arg Val Leu Phe Asp Gln Ala Ala  
 595 600 605

Leu Ala Ala Gly Asp Ser Leu Lys Asp Pro Ala Ala Tyr Val Arg Arg  
 610 615 620

Leu Asn Lys Leu Leu Glu Leu Ser Ala  
 625 630

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<212> DNA

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gcgtaccgtt gtccagtagg 20

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<213> *Xanthomonas albilineans*

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gctggaaacc gagaatctga 20

<210> 50

<211> 20

<212> DNA

<213> *Xanthomonas albilineans*

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gacacgatca gccgctagga 20

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accagcagtt gggccagcct 20

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tgcccacagg ccgtcgagt

19

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gcgagaggac aagctgctgc

20

<210> 54  
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<212> DNA  
<213> *Xanthomonas albilineans*

<400> 54

cgtttaggat gcagcgctcg

20.